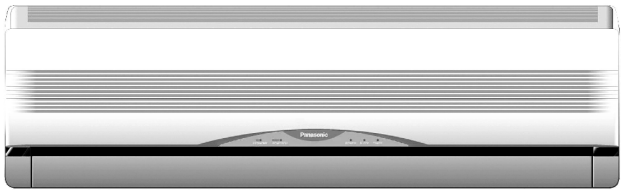
Order No. MAC0310034C1

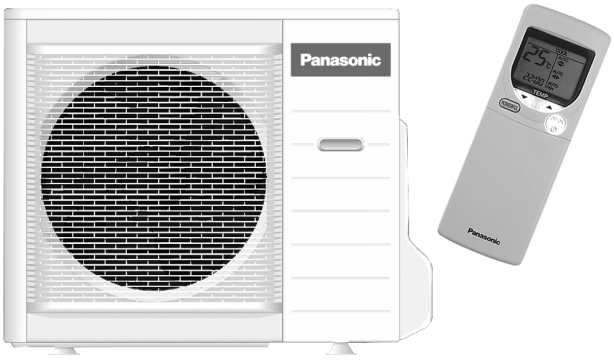
Service Manual

Room Air Conditioner



CS-A24CKPG CU-A24CKP6G

CANADA



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 Features

- **High Efficiency**

- **Compact Design**

- **Comfort Environment**
  - 8 hours of sleep mode operation
  - Air filter with function to reduce dust and smoke
  - Wider range of horizontal discharge air
  - New Automatic air swing and manual adjusted by remote control for horizontal airflow.

- **Auto Restart**
  - Random auto restart after power failure for safety restart operation

- **Removable and Washable Front Panel**

- **Remote Control Self-illuminating Button**

- **Air Purifying Filter**
  - Trap dust, tobacco smoke and tiny particles
  - Prevent the growth of bacteria and viruses trapped

- **Solar Refreshing Deodorizing Filter**
  - Remove unpleasant odour from the air

- **Quality Improvement**
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - Overload protector
  - Noise prevention during soft dry operation.
  - Anti-dew Formation Control (Cooling & Soft Dry)
  - Overload Protection Control (Heating)
    - Outdoor Fan Control
    - Compressor High Pressure Control
  - Blue Coated Condenser
    - High resistance to corrosion.
  - Low outdoor ambient temperature control.

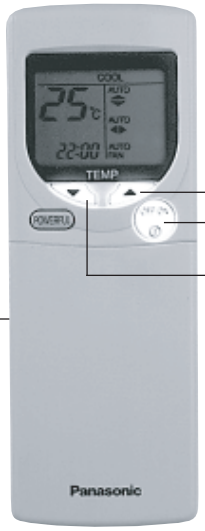
- **Operation Improvement**
  - Economy mode to reduce electrical power consumption
  - Powerful mode to reach the desired room temperature quickly

- **Long Installation Piping**
  - Long piping up to 25 meter

- **24-hour Timer Setting**

2 Functions

Remote Control



Self illuminating button

OFF / ON
Operation OFF / ON

MODE
Operation Mode Selection

- AUTO Automatic Operation Mode
- HEAT Heating Operation Mode
- COOL Cooling Operation Mode
- DRY Soft Dry Operation Mode

FAN SPEED
Indoor Fan Speed Selection

- FAN ■ Low Fan Speed
- FAN ■■■ Medium Fan Speed
- FAN ■■■■■ High Fan Speed
- AUTO FAN Automatic Fan Speed

AIR SWING
Vertical Airflow Direction Control

- ▲▼ Vertical Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).
- ◀▶ Horizontal Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).

POWERFUL
Powerful Mode Operation OFF/ON

ECONOMY
Economy Mode Operation OFF/ON

TEMP.
Room Temperature Setting

Heating, Cooling, Soft Dry Operation.
- Temperature Setting 16°C to 30°C)

Automatic Operation
- Hi Operation with 2°C higher than standard temperature.
- Operation with standard temperature.
- Lo Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER
Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIME
Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL
Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK
Clock Setting

- Current time setting.

SLEEP
Sleep Mode Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. “Beep” sound will be heard at the 5th second.
  (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. “Beep, beep” sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green)..... Lights up in operation, blinks in Automatic Operation Mode judging and Hot Start operation.
- SLEEP (Orange) ..... Lights up in Sleep Mode Operation.
- TIMER (Orange) ..... Lights up in Timer Setting.
- POWERFUL (Orange) ... Lights up in Powerful Mode Operation.
- ECONOMY (Green) ..... Lights up in Economy Mode Operation.

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates refer to Indoor Fan Speed control.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Heating : Fan speed varies from Me → SSLo in accordance with indoor heat exchanger.
  - Cooling : Fan rotates at Hi, Me and SLo speed. Deodorizing control is available.
  - Soft Dry : Fan rotates at SLo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical and horizontal airflow.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Anti-Dew Formation Control

- Anti-Dew Formation Control for indoor unit discharge area.

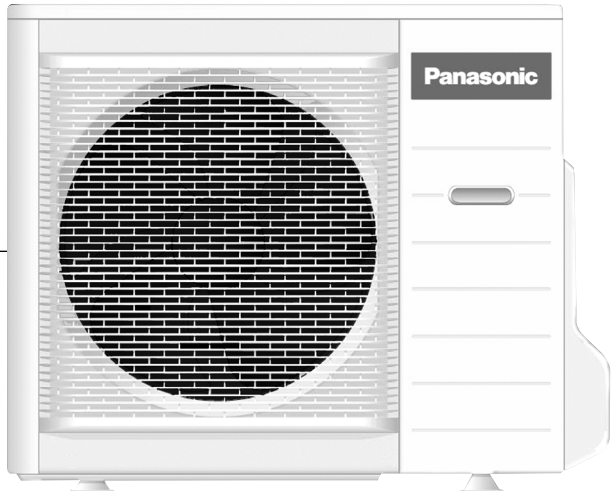
Hot-Start Control

- At Heating Operation the indoor fan will operate at SLo speed when indoor heat exchanger temperature reaches 30°C.

Anti Cold Draft Control

- The indoor fan operates at Lo^{-} (30 sec.) after that SSLo when the indoor heat exchanger temperature is low.
  (During Heating mode thermal off)

Outdoor Unit



Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- Inner protector.

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- 6-pole induction motor (1 speed).

Deice Control

- To prevent frosting at outdoor heat exchanger during Heating Operation.

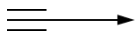
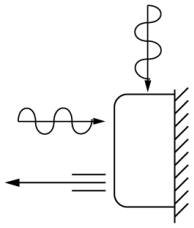
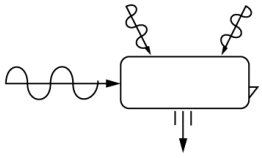
4-Way Valve Control

- When the unit is switched to “OFF” during Heating Operation, 4-way valve stays at Heating position for 5 minutes.

Low Ambient Temperature Control

- To protect air conditioner from damage under the low outdoor ambient temperature < -12°C.

3 Product Specifications

		Unit	CS-A24CKPG	CU-A24CKP6G
Power Source		Phase, Voltage, Cycle	Single, 208 - 230, 60 Hz	
Cooling Capacity		kW (BTU/h)	7.03 - 7.03 (24,000 - 24,000)	
Heating Capacity		kW (BTU/h)	8.10 - 8.22 (27,600 - 28,000)	
Moisture Removal		l/h (Pint/h)	3.1 (6.5)	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)	m^3/min (cfm)	Cooling; 13.6 (480) - 13.6 (480) Heating; 15.1 (534) - 15.1 (534)	—
	Indoor Air (Me)	m^3/min (cfm)	Cooling; 15.6 (550) - 15.6 (550) Heating; 15.6 (550) - 15.6 (550)	—
	Indoor Air (Hi)	m^3/min (cfm)	Cooling; 16.6 (590) - 16.6 (590) Heating; 17.2 (610) - 17.2 (610)	Cooling; 57.2 (2,020) - 60.3 (2,130)
	Indoor Air (SHi)	m^3/min (cfm)	Cooling; 17.2 (610) - 17.2 (610)	—
Noise Level		dB (A)	Cooling; High 50 - 50, Low 45 - 45 Heating; High 50 - 50, Low 45 - 45	Cooling; High 58 - 59 Heating; High 58 - 59
		Power level dB	—	—
Electrical Data	Input Power	kW	Cooling; 2.55 - 2.60 Heating; 2.75 - 2.80	
	Running Current	A	Cooling; 12.5 - 11.6 Heating; 13.5 - 12.5	
	EER	w/w (BTU/hW)	Cooling; 2.76 - 2.70 (9.41 - 9.23)	
	COP	w/w (BTU/hW)	Heating; 2.95 - 2.94 (10.04 - 10.00)	
	Starting Current	A	63.0	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 5/8” L ; Half Union 1/4”	G ; 3-way valve 5/8” L ; 2-way valve 1/4”
Pipe Size (Flare piping)		inch inch	G ; (gas side) 5/8” L ; (liquid side) 1/4”	G ; (gas side) 5/8” L ; (liquid side) 1/4”
Drain Hose	Inner diameter	mm (inch)	12 (0.47)	—
	Length	mm (inch)	650 (25.59)	—
Power Cord	Length	m	—	—
	Number of core-wire		—	—
Dimensions	Height	inch (mm)	10 - 13/16 (275)	29 - 17/32 (750)
	Width	inch (mm)	39 - 9/32 (998)	34 - 7/16 (875)
	Depth	inch (mm)	8 - 9/32 (210)	13 - 19/32 (345)
Net Weight		lb (kg)	26 (12.0)	139 (63.0)
Compressor	Type		—	Rotary (1 cylinder) rolling piston type
	Motor Type		—	Induction (2-poles)
	Rated Output	kW	—	1.8

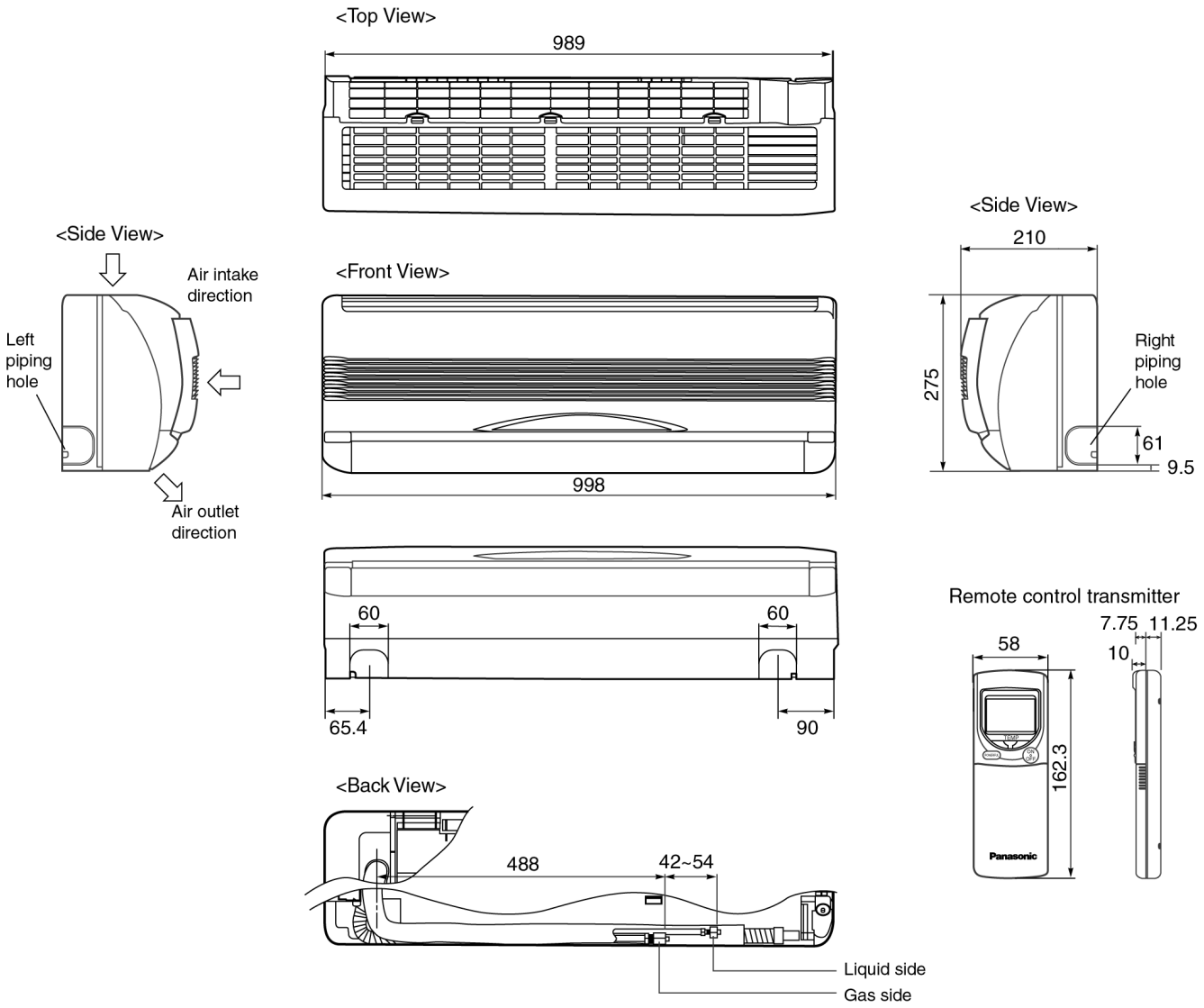
			Unit	CS-A24CKPG	CU-A24CKP6G
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		ASHT-18	PP
	Motor	Type		Transistor (8-poles)	Induction (6-poles)
		Input	W	44.8 - 53.5	151.2 - 135.7
	Rated	Output	W	30	110
	Fan Speed	Low	rpm	Cooling; 1,390 - 1,390 Heating; 1,540 - 1,540	—
		Medium	rpm	Cooling; 1,590 - 1,590 Heating; 1,590 - 1,590	—
		High	rpm	Cooling; 1,690 - 1,690 Heating; 1,740 - 1,740	920 - 970
		SuperHigh	rpm	Cooling; 1,740 - 1,740	—
Heat Exchanger	Description			Evaporator	Condenser
	Tube material			Copper	Copper
	Fin material			Aluminium (Pre Coat)	Aluminium (Blue Coat)
	Fin Type			Slit Fin	Corrugated Fin
	Row / Stage			(Plate fin configuration, forced draft)	
				2 × 15	2 × 28
	FPI			21	18
	Size (W × H × L)		mm (inch)	810 × 315 × 25.4	833.2 × 711.2 × 44 867.8
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(cm^3)	—	SUNISO 4GDID or ATMOS M60 (1,130)
Refrigerant (R-22)			g (oz)	—	1,780 (62.8)
Thermostat				Electronic Control	Electronic Control
Protection Device				—	Inner Protector
Capillary Tube	Length		mm	—	Cooling; 967, Heating; 690
	Flow Rate		l/min	—	Cooling; 19.2, Heating; 23.5
	Inner Diameter		mm	—	Cooling; 2.0, Heating; 2.0
Air Filter	Material Style			P.P. Honeycomb	—
Capacity Control				Capillary Tube	
Compressor Capacitor			μF, VAC	—	60 μF, 400VAC
Fan Motor Capacitor			μF, VAC	—	5.0 μF, 440VAC

Note:

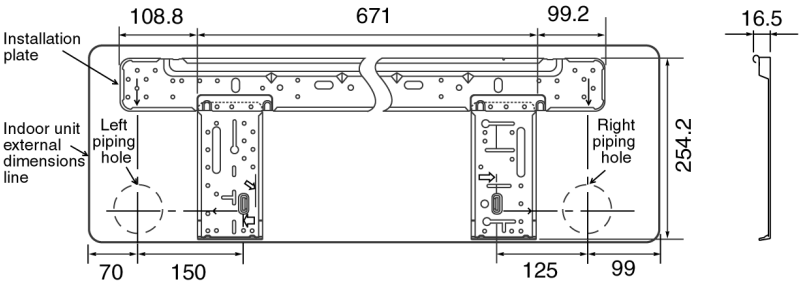
- Specifications are subject to change without notice for further improvement.

4 Dimensions

CS-A24CKPG (Indoor Unit)

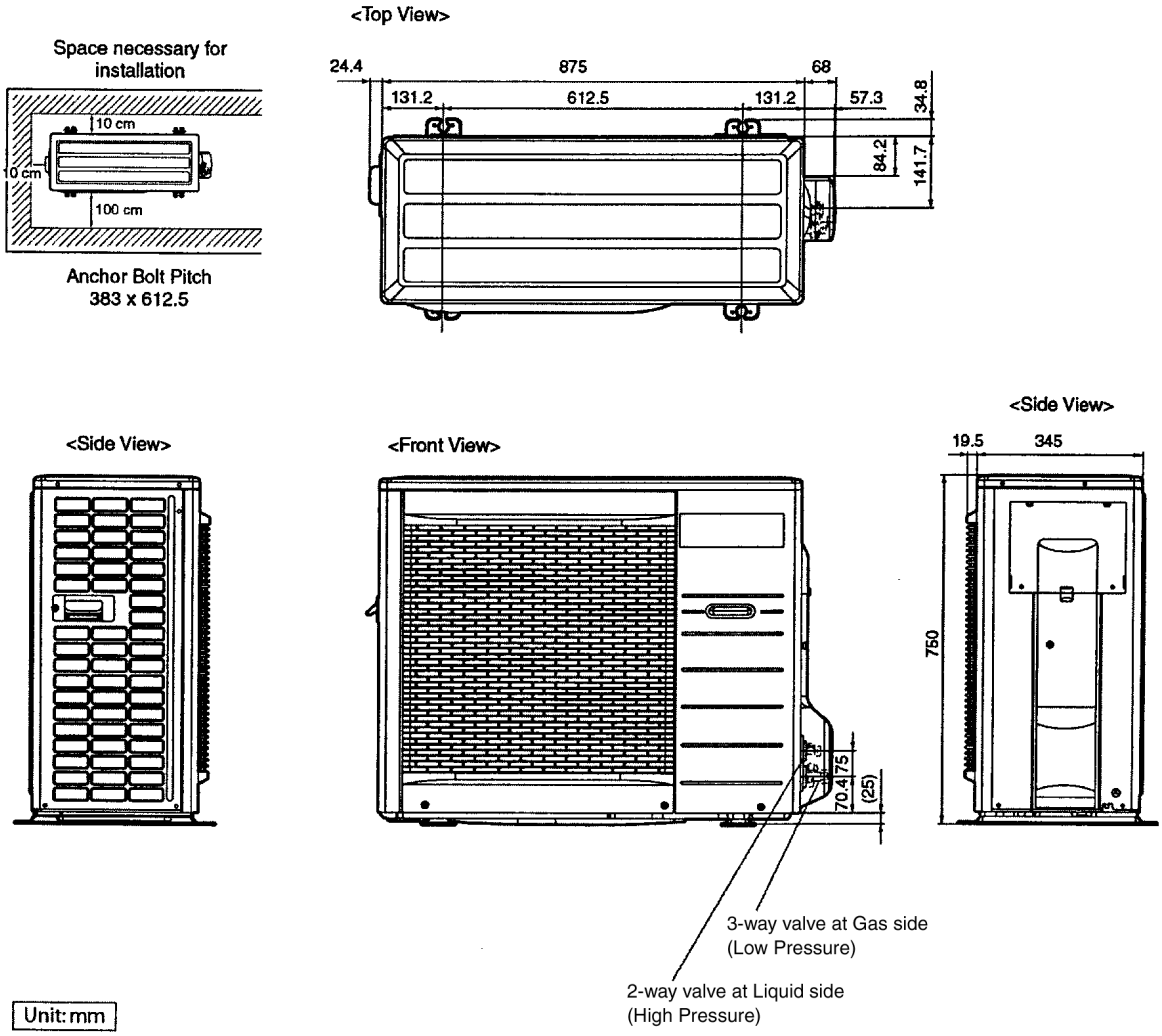


Relative position between the indoor unit and the installation plate <Front View>



Unit : mm

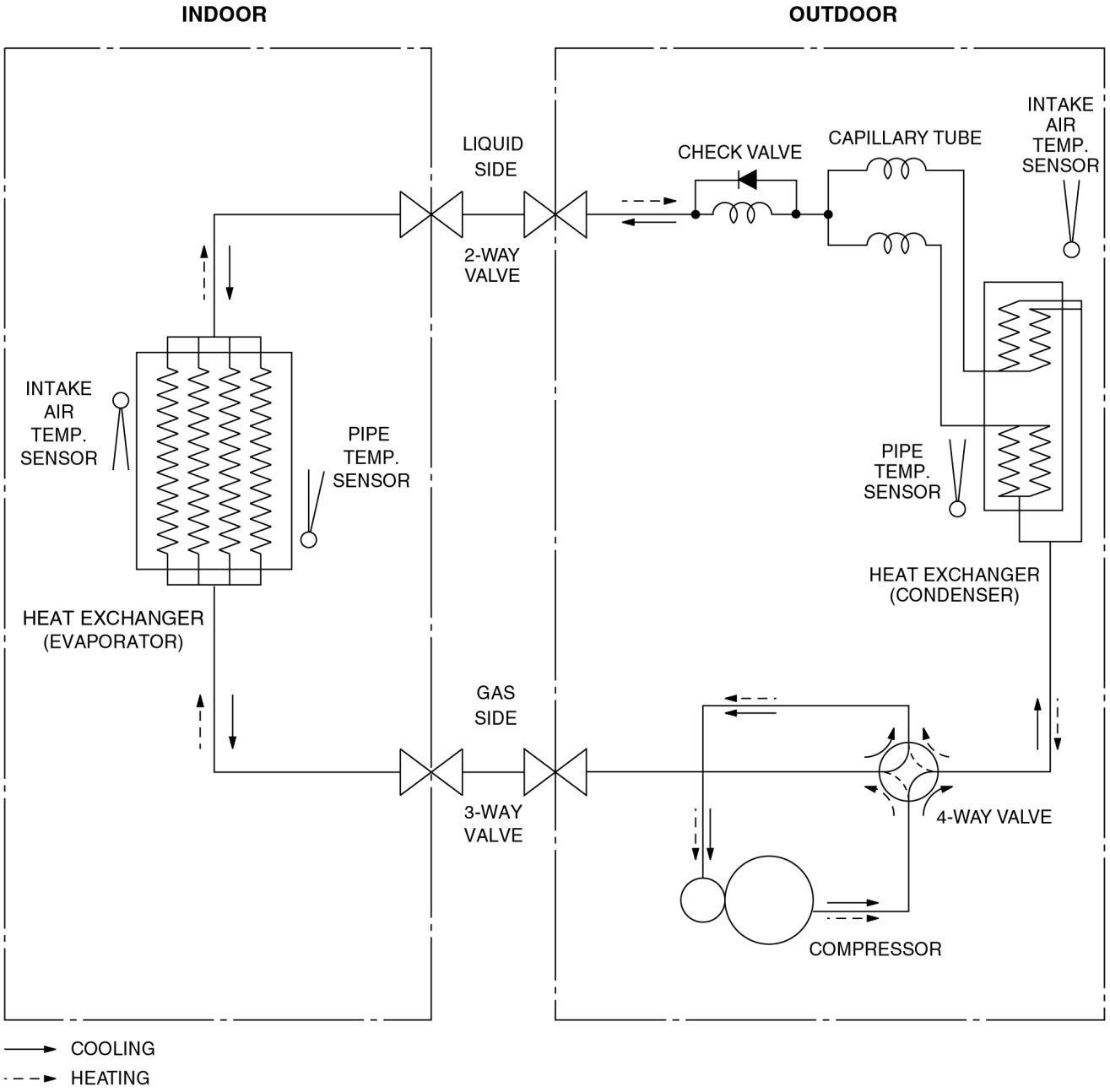
CU-A24CKP6G (Outdoor Unit)



Unit: mm

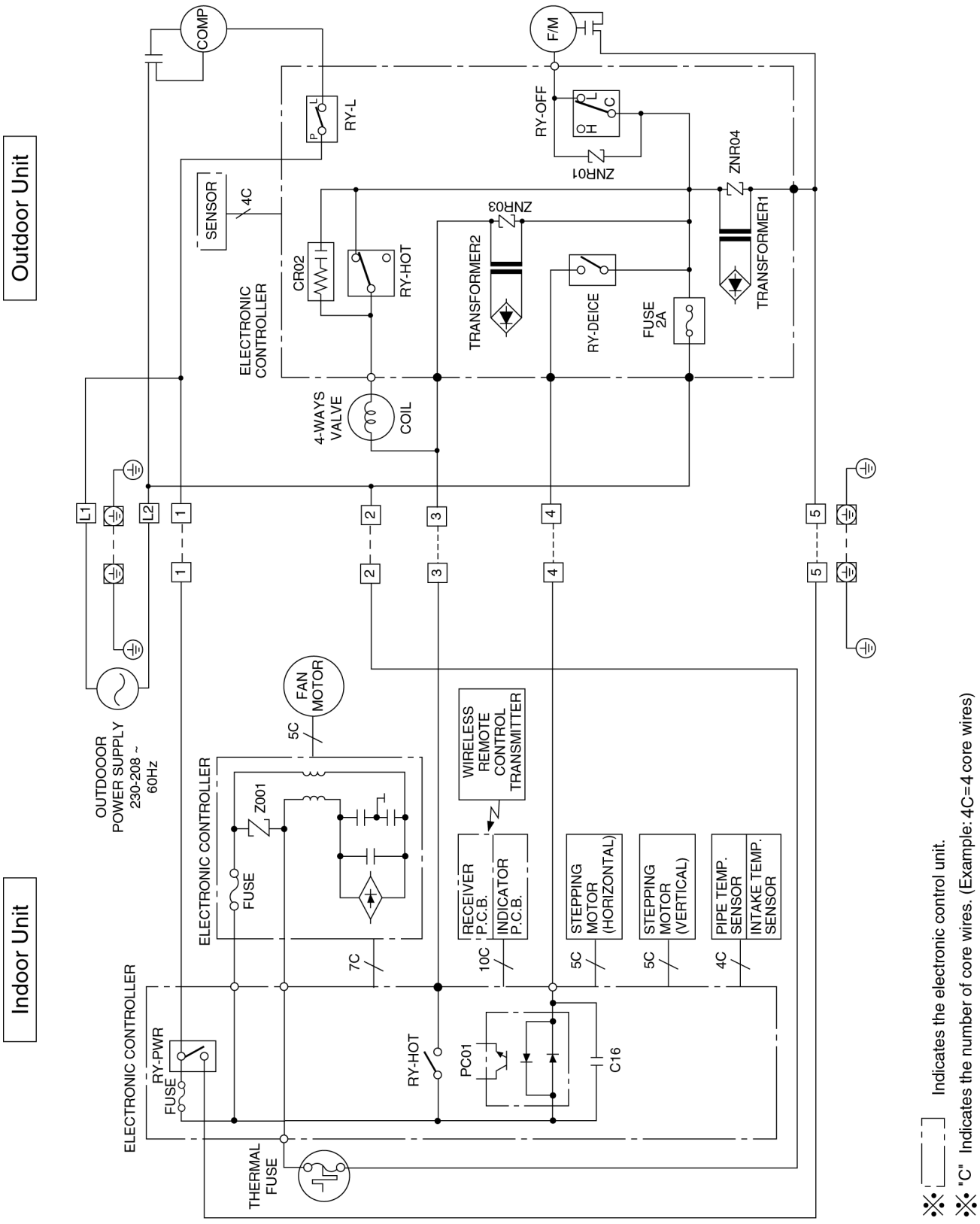
5 Refrigeration Cycle Diagram

CS-A24CKPG CU-A24CKP6G



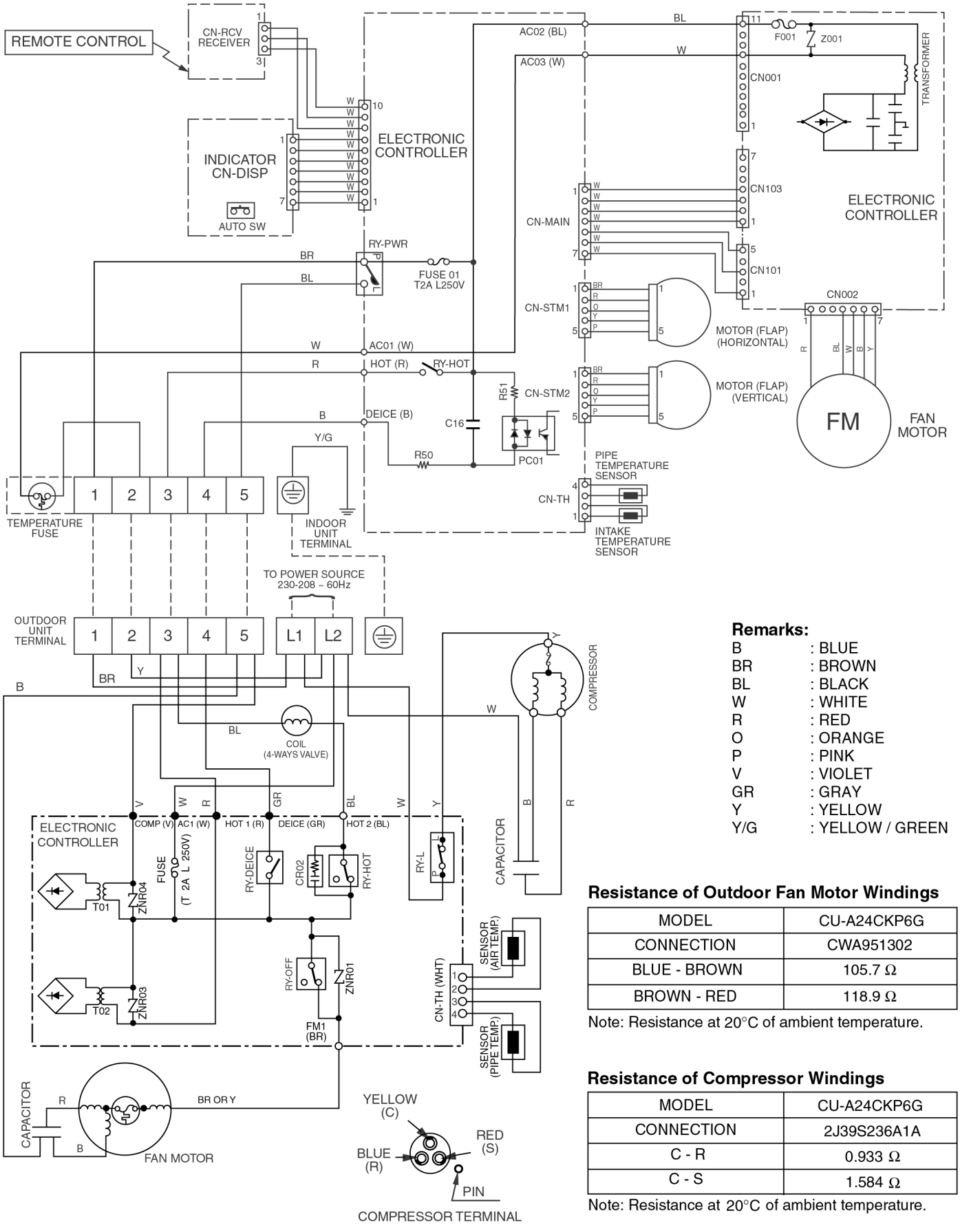
6 Block Diagram

CS-A24CKPG CU-A24CKP6G



7 Wiring Diagram

CS-A24CKPG CU-A24CKP6G



Remarks:

B	: BLUE
BR	: BROWN
BL	: BLACK
W	: WHITE
R	: RED
O	: ORANGE
P	: PINK
V	: VIOLET
GR	: GRAY
Y	: YELLOW
Y/G	: YELLOW / GREEN

Resistance of Outdoor Fan Motor Windings

MODEL	CU-A24CKP6G
CONNECTION	CWA951302
BLUE - BROWN	105.7 Ω
BROWN - RED	118.9 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-A24CKP6G
CONNECTION	2J39S236A1A
C - R	0.933 Ω
C - S	1.584 Ω

Note: Resistance at 20°C of ambient temperature.

8 Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

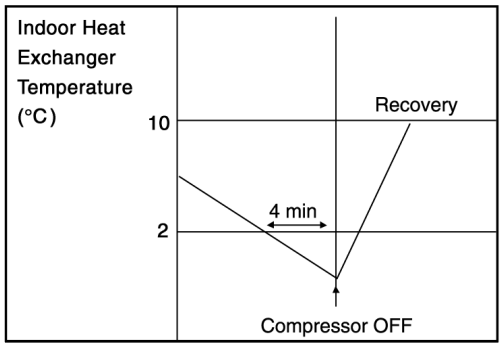
7 minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

Anti-Freezing Control

- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically.
  (Time Delay Safety Control is valid)

▲ T = Intake air temperature - Indoor heat exchanger temperature
This is to protect reverse rotation of the compressor when there is an instantaneous power failure.

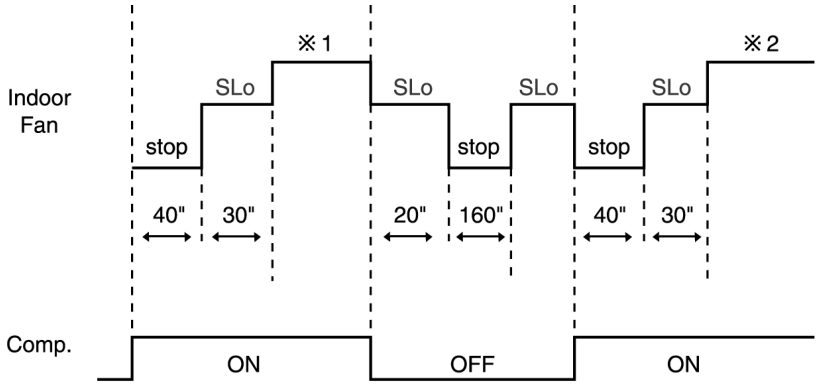
Anti-Dew Formation Control

- Purpose is to prevent dew formation on indoor unit air discharge area.
- When the following conditions occur for 30 minutes continuously, anti-dew formation is controlled by indoor fan speed shift to low (Changed to Lo^{+}):
  - Indoor intake air temperature is more than 24°C and less than 30°C.
  - Remote Control setting temperature is less than 25°C.
  - Compressor is on.
  - Cooling operation mode.
  - Indoor Fan motor operate at Low fan speed.
- This control is cancelled immediately when above condition is changed.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

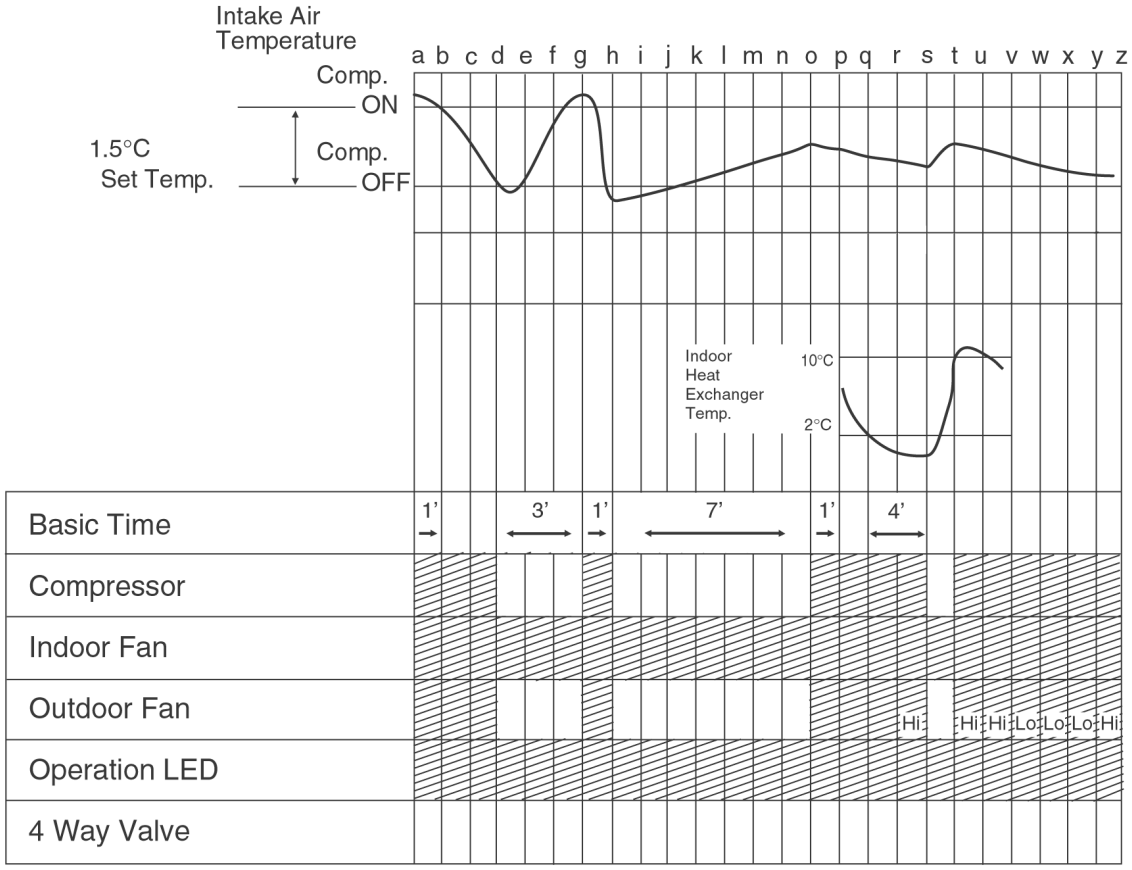
- Fan speed rotates in the range of Hi to Me.
- Deodorizing Control.



※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram



<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – t : Anti Freezing Control
v – y : Outdoor Fan Control

Operation

Stop

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.
- During Soft Dry operation, the Indoor Fan will operate at SLo speed.
- Once room temperature reaches below Soft Dry OFF temperature. Indoor Fan, Compressor and Outdoor Fan stop for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

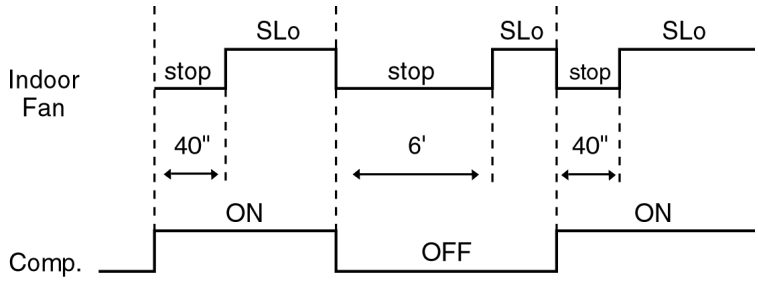
Anti-Dew Formation Control

- Same as Anti-Dew Formation Control for Cooling Mode operation.

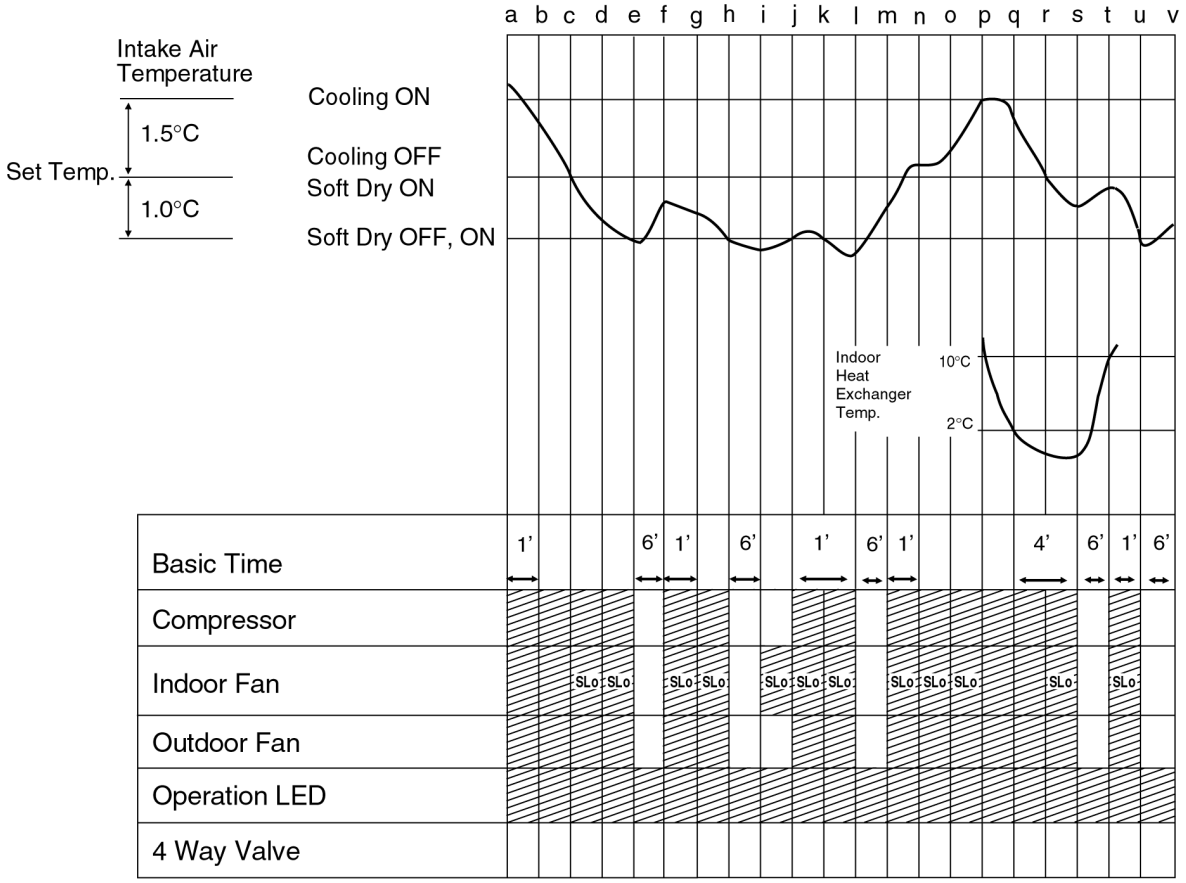
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed off and on at SLo speed.
- Deodorizing Control.



Soft Dry Operation Time Diagram



<Description of operation>

a – c, p~r : Cooling Operation
c – p : Soft Dry Operation
e – f : Soft Dry OFF
j – l : 60 sec. Forced Operation
q – t : Anti Freezing Control

Operation

Stop

8.3. Heating Mode Operation

- Heating in operation according to Remote Control setting.

Time Delay Safety Control

- When the compressor is stopped by Power Switch, Remote Control, or there is a power failure, it restarts after 3 minutes when the Power Switch, Remote Control is turned ON, or the power supply is resumed.
- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes.

Overload Protection Control

(a) Outdoor Fan Control

- If the temperature of the Outdoor Heat Exchanger less than -3°C, Outdoor Fan is ON. The Outdoor Fan stop, when Outdoor Heat Exchanger temperature is T_b or more according to Outdoor Air Temperature region as table below:

  The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.

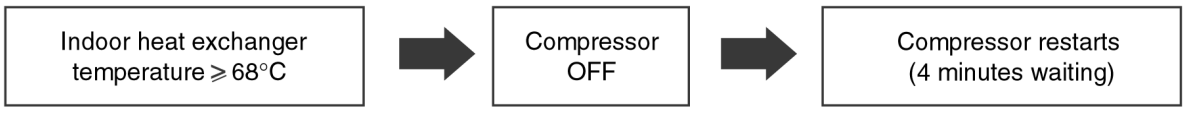
Outdoor Air Temperature	<10°C	⩾10°C ~ <15°C	⩾15°C ~ <20°C	⩾20°C ~ <25°C	⩾25°C	Outdoor Fan OFF
T_b	⩾5°C	⩾4°C	⩾3°C	⩾2°C	⩾1°C	

During starting of Heating mode and after deice, Outdoor Fan ON for 90 sec. (Hi).

(b) Compressor High Pressure Control

- If the indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.

  (Time Delay Safety Control - 4 minutes waiting).

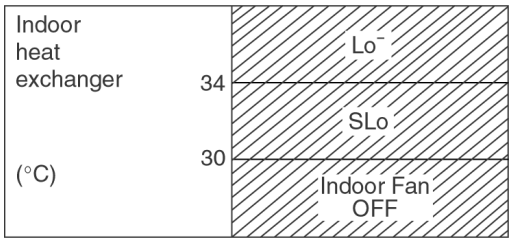


4-way Valve Control

- 4-way valve ON during Heating operation, except deicing operation.
- When the unit is switched to “OFF” during Heating operation, 4-way valve stays at Heating position for 5 minutes.

Hot Start Control

When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.



Hot Start is completed when indoor heat exchanger reaches 42°C.

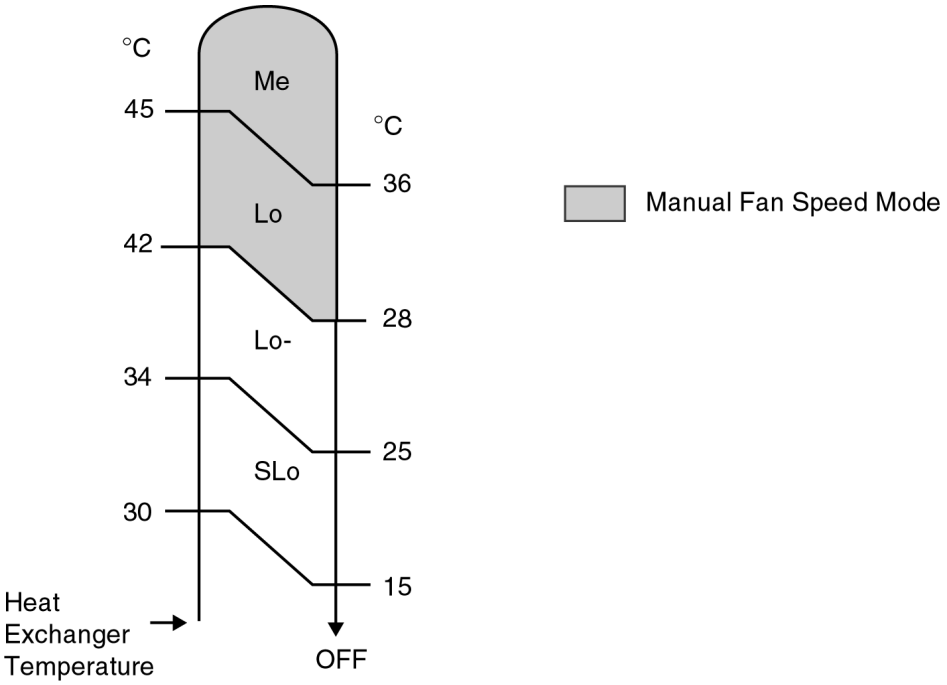
Maximum Hot start duration = 4 minutes. After 4 minutes,

Hot start operation will be shifted to normal Heating operation.

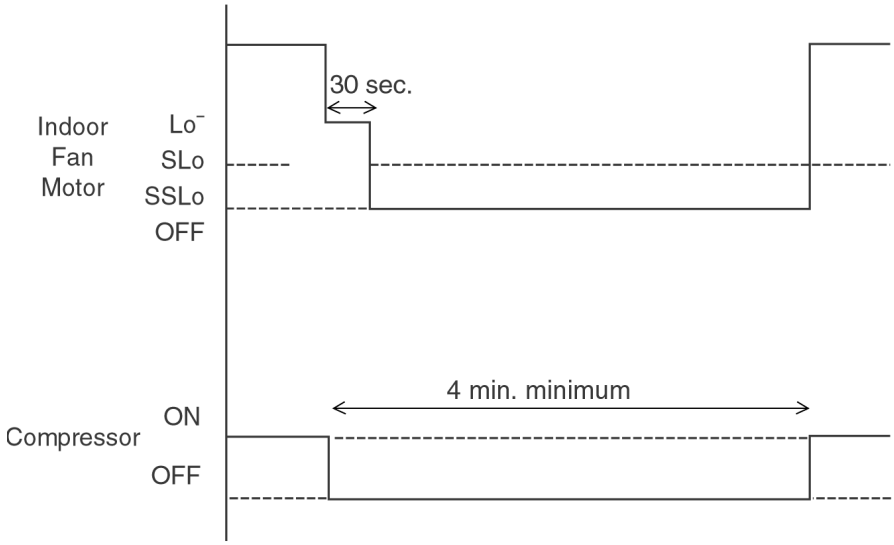
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during heating operation.

- Fan speed rotates in the range of Me → SLo according to the heat exchanger temperature.

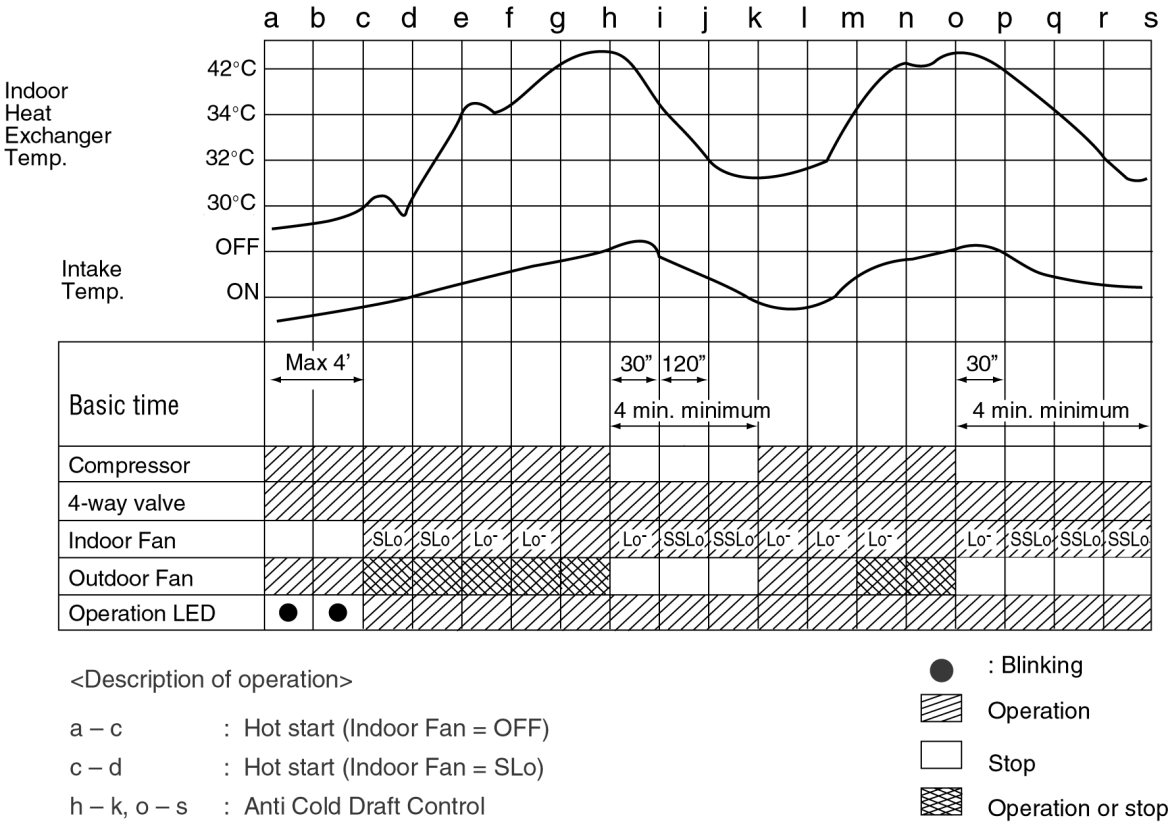


Anti Cold Draft Control



When COMP = Thermal OFF, indoor fan speed immediately changed to Lo⁻ for 30 sec., follow by SSLo speed until COMP = ON.

Heating Operation Time Diagram



<Description of operation>

a – c : Hot start (Indoor Fan = OFF)

c – d : Hot start (Indoor Fan = SLo)

h – k, o – s : Anti Cold Draft Control

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

  Deice operation detection commences in Heating operation starts or 60 minutes after previous deice operation. If the outdoor piping temperature drops to -4°C for 50 sec. continuously during compressor is in operation, deice will start.

  (There is no detection during Outdoor Fan stops.)

- Overload Deicing

  During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.

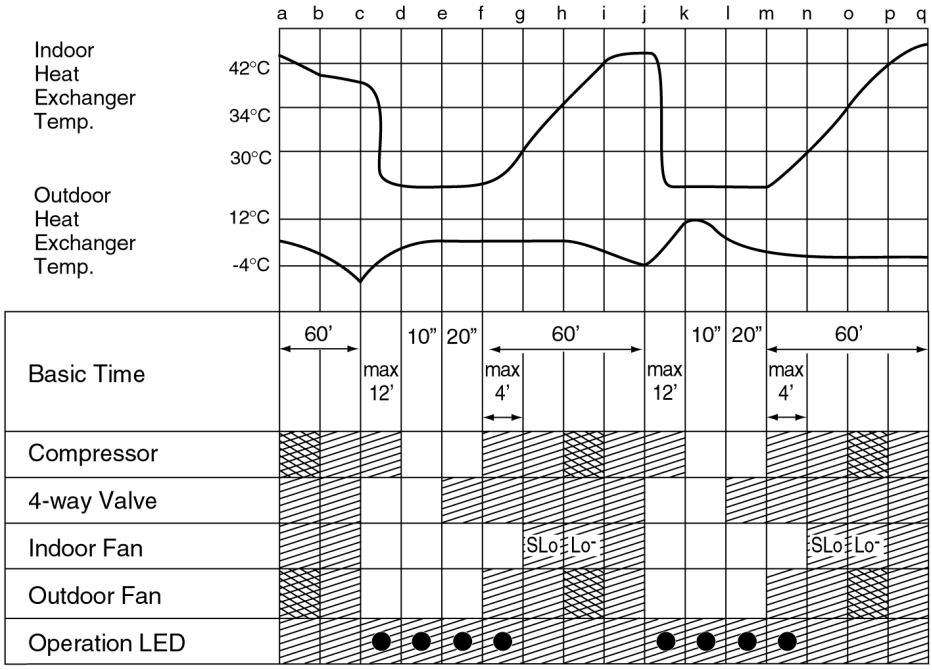
- Deicing ends when

  (a) 12 minutes after deicing operation starts;

  (b) The outdoor piping temperature rises to about 12°C.

- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

a) Normal Deicing Time Diagram

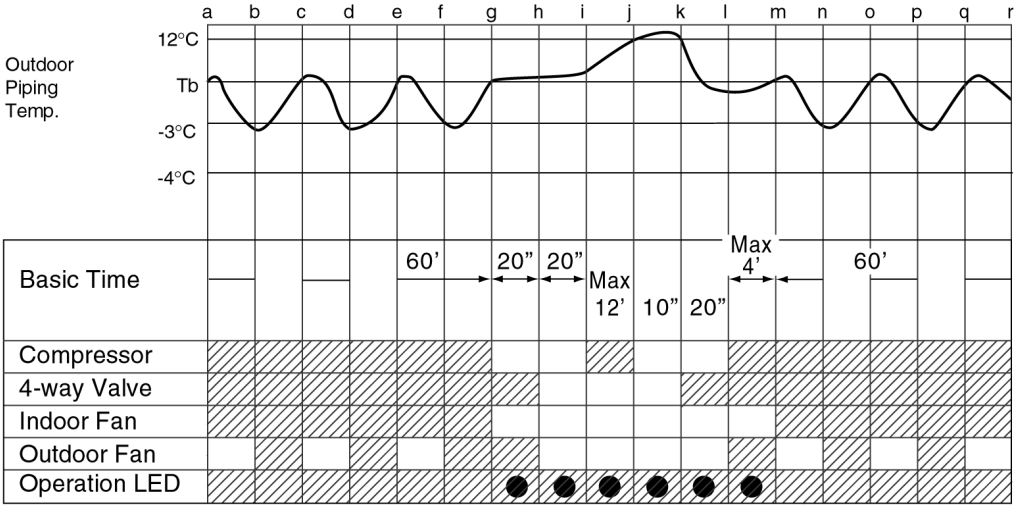


<Description of operation>

a – c : Deicing operation judging condition established
c – f : Deicing operation
f – g : Hot start (add 4 minute delay timing)

● : Blinking
Operation
Stop
Operation or stop

(b) Overload Deicing Time Diagram



<Description of operation>

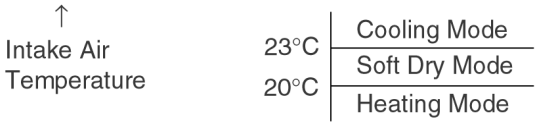
a – i : Overload control
i – l : Overload deicing
l – m : Hot start
m – r : Overload control
g – i : Preparation for overload deicing (For normal R22 control, operation for g – i is not included, applicable only for new refrigerant model).

● : Blinking
Operation
Stop

8.4. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at SLo fan speed for 25 seconds to sense intake air temperature and determine the 1st operation mode. If indoor intake air temperature is less than 16°C, Heating mode will immediate operate.

Standard for Determining Operation Mode
1st Judgement



Operation Mode	Setting Temperature (Standard)
Cooling	25°C
Soft Dry	22°C
Heating	21°C

2. Operation mode will determined again after 1 hour of operation, if the room temperature reaches set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※ The present operation mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) even though after 1 hour from automatic operation mode started.

Standard for Determining Operation Mode
2nd Judgement onwards

Present Mode	Judgement	Next Mode		
		Cooling	Soft Dry	Heating
Cooling	23°C: Cooling / Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement: Below 23°C)
Soft Dry	23°C: Soft Dry / Heating	Not Applicable	O (Judgement: 23°C & Above)	O (Judgement: Below 23°C)
Heating	23°C: Cooling / Heating	O (Judgement: Above 23°C)	Not Applicable	O (Judgement: 23°C & below)

※ Automatic Set Temperature
Refer 3. as below.

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.

However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

Operation	Hi	(Standard)	Lo
	(+2°C)	(±0°C)	(-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

- The mode judging temperature and standard setting temperature can be increased by 2°C, by open the circuit of JX1 at indoor electronic controller.

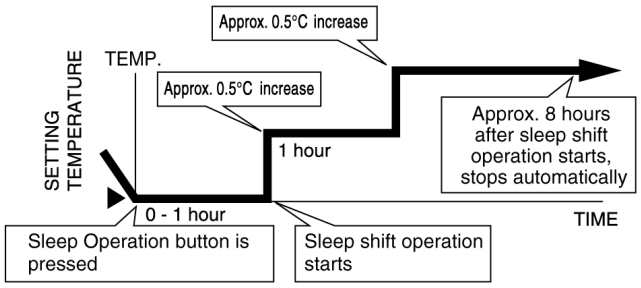
Operation Mode	Setting Temperature (Standard)
Cooling	27°C
Soft Dry	24°C
Heating	23°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overcooling.

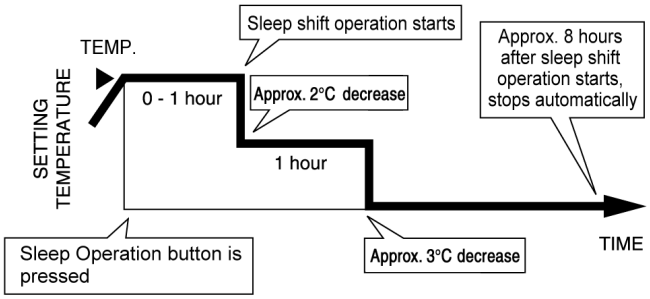
- Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.
- The setting temperature will be risen by **0.5**°C at the start of operation and by **0.5**°C one hour later.
- The airflow volume will automatically change to Lo fan speed.
- Sleep Mode operation time is **8** hours, the operation will be stop after **8** hour.
- When used together with the Timer, the Timer has priority.



Heating Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overheating.

- Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.
- The setting temperature will decrease by **2**°C at the start of operation and by **3**°C one hour later.
- The fan speed refer to Indoor Fan Motor Control.
- Sleep Mode operation time is **8** hours, the operation will be stop after **8** hour.
- When used together with the Timer, the Timer has priority.



8.6. Random Auto Restart Control

- If there is a power failure, operation will be automatically restarted after 3 to 4 minutes when the power is resumed. It will start with previous operation mode and airflow direction.
- Restart time is decided randomly using 4 parameter:- Intake air temperature, setting temperature, fan speed and Air Swing Blade position.
- Auto Restart Control is not available when Timer or Sleep Mode is set.
- This control can be omitted by open the circuit of JX2. (Refer Electronic Circuit Diagram)

8.7. Indoor Fan Speed Control

- Auto Fan Speed Control

  When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.

- Manual Fan Speed Control

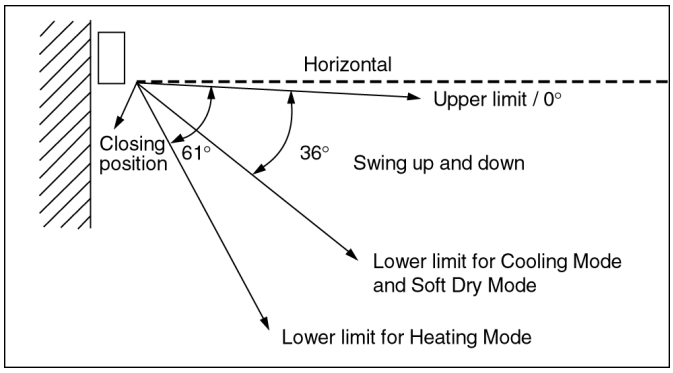
  Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control.

Tap				SHi	Hi	Me	Lo+	Lo	Lo-	SLo	SSLo	Stop
Cooling	Normal	Airflow volume Manual	Hi		○							
			Me			○						
			Lo					○				
		Airflow volume Auto			○	○				○		○
		Sleep Shift							○			
	Powerful	Airflow volume Manual		○								
		Airflow volume Auto		○								
		Sleep Shift							○			
	Economy	Airflow volume Manual								○		
		Airflow volume Auto								○		
		Sleep Shift							○			
Soft Dry	Normal, Powerful, Economy	Airflow volume Manual								○		○
		Airflow volume Auto								○		○
		Sleep Shift							○			
Heating	Normal	Airflow volume Manual	Hi	○					○	○	○	○
			Me			○			○	○	○	○
			Lo				○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○
	Powerful	Airflow volume Manual		○		○	○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○
	Economy	Airflow volume Manual		○		○	○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○

8.8. Airflow Direction Control

Vertical Airflow Direction Auto-Control

- When setting an Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.
- The louver does not swing when the Indoor Fan Motor stops during operation at the upper limit.
- When stopped with remote control, the discharge vent is reset, and stopped at the closing position.
- During Anti-dew condensation prevention, Airflow Direction Auto-control angle changes from 0° - 36° to 12° - 28° under Cooling and Soft Dry operation mode.

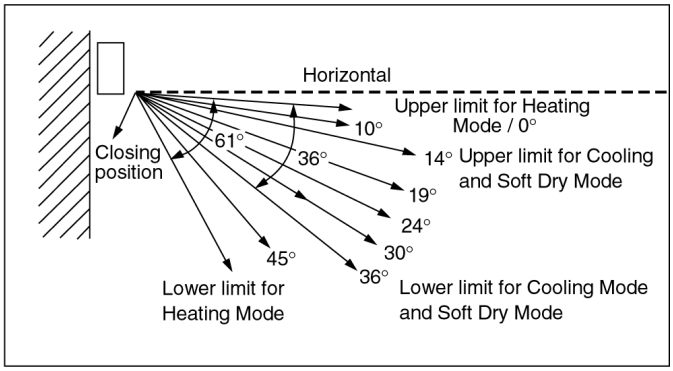


※ 1. There is no swinging while indoor fan motor is stopped during Cooling and Soft Dry operation.
※ 2. When the piping air temperature reaches 38°C, the louver is changed from upper to lower limit. When the piping air temperature falls to 35°C, the louver is changed from lower to upper limit.

Vertical Airflow Direction manual Control

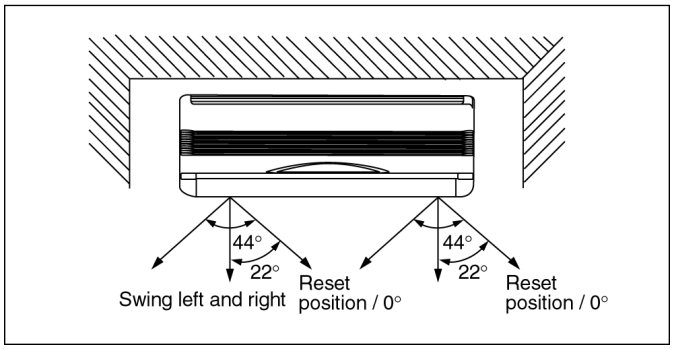
- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction louver moves up and down in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired louver position.
- When the remote control is used to stop the operation, the discharge vent is reset, and stopped at the closing position.
- During Anti-dew condensation prevention, Airflow Direction Manual control angles change from 14°, 19°, 24°, 30°, 36° to 16°, 18°, 20°, 22°, 24° under Cooling and Soft Dry operation mode.



Horizontal Airflow Direction Auto-Control

- When set a Airflow Direction Auto-Control with remote control, the vanes swings left and right as shown in the diagram.
- The vanes do not swing when the Indoor Fan Motor stops during operation at 22° angle.
- When stopped with remote control, the discharge vent is reset, and stopped at the reset position.
- During Anti-dew condensation prevention, Airflow Direction Auto-control angle changes from 0° - 44° to 14° - 30° under Cooling and Soft Dry operation mode.

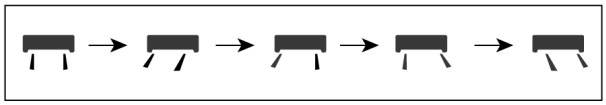


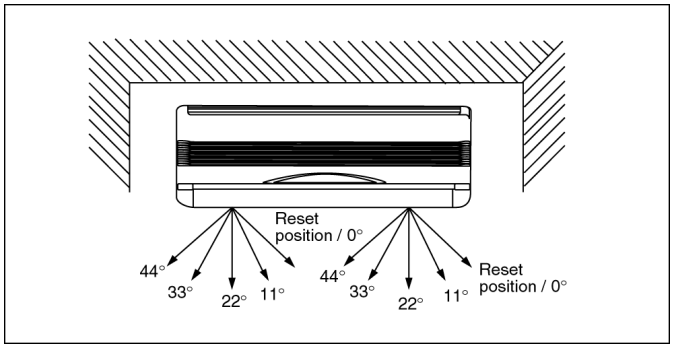
※ 1. There is no swinging while indoor fan motor is stopped during Cooling and Soft Dry operation.
※ 2. In Heating operation, when the intake air temperature reaches set temperature, the airflow direction is Auto Swing left and right. When the intake air temperature falls to 2°C lower than set temperature, the airflow direction is stop at 22° angle.

Horizontal Airflow Direction manual Control

- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction vanes move left and right in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired vane position.





- When the remote control is used to stop the operation, the vanes is reset, and stopped at reset position.
- During Anti-dew condensation prevention, Airflow Direction Manual control angles change from 0°, 11°, 22°, 33°, 44° to 14°, 18°, 22°, 26°, 30° under Cooling and Soft Dry operation mode.

8.9. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start to operate slightly before the set time, so that the room will reach nearly the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at SLo speed for 25 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.10. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
  - Stopping the Air Conditioner using ON/OFF switch.
  - Stopping the Sleep Mode.
  - Stopping the Powerful Mode.
  - Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-

  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second).

  Repeat the above if you want to switch ON the beep sound.

※ However, if the “Automatic Operation Button” has been pressed the Automatic operation will be activated.
If you do not require this operation, you may change it by using the remote control.

8.11. Economy Mode Operation

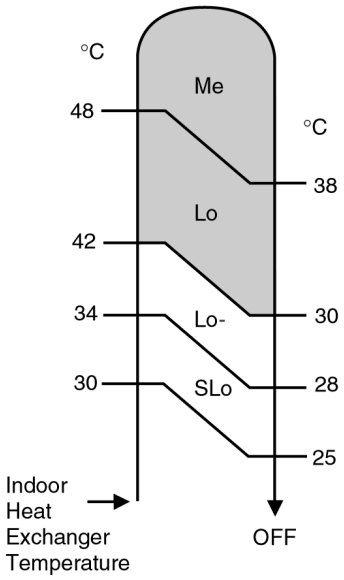
Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.

However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

1. **Cooling and Soft Dry Mode**
   - When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running under SLo Fan speed.
   - Vertical Airflow Direction:-

     In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing.

2. **Heating Mode**
   - When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.
   - The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C .

Set Fan Speed

   - Vertical Airflow Direction:-

     In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing.

3. **Economy Mode will stop if:**
   - Economy mode button is pressed again.
   - Stopped by ON / OFF switch.
   - Timer-off activates.
   - Powerful mode button is pressed.
   - Fan Speed control button is pressed.
   - Sleep mode button is pressed ON.
   - Operating mode is changed.
   - Air Swing condition is changed.

8.12. Powerful Mode Operation

Purpose of this operation is to be obtain the setting temperature quickly.

1. **Cooling and Soft Dry Mode**
   - When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running under SHi Fan Speed (Cooling), SLo Fan Speed (Soft Dry).

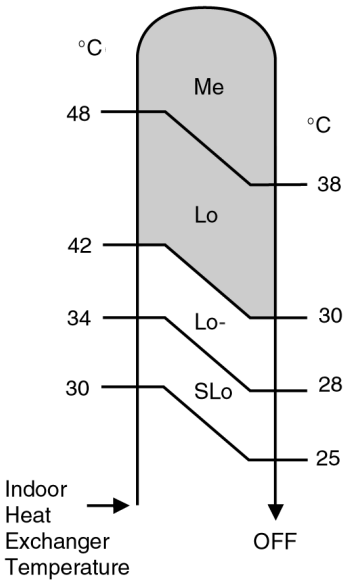
   - Vertical Airflow Direction:-

     In “Manual” setting, the vane will automatically shift down 10° lower than previous setting.

     In “Auto” setting, the vane will automatically swing up and down. However the upper and lower limit will be shifted 10° downward.

2. **Heating Mode**
   - When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.

   - The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically set to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

Set Fan Speed

   - Vertical Airflow Direction:-

     In “Manual” setting, the vane will automatically shift down 5° lower than previous setting.

     In “Auto” setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5° downward.

3. **Powerful mode will operate for 15 minutes only.**

4. **Powerful Mode will stop if:**
   - Powerful mode button is pressed again.
   - Stopped by ON / OFF switch.
   - Timer-off activates.
   - Economy mode button is pressed.
   - Sleep mode button is pressed.
   - Operating mode is changed.

8.13. Low outdoor ambient temperature control

A. Purpose

To protect air conditioner from damage under the low outdoor ambient temperature.

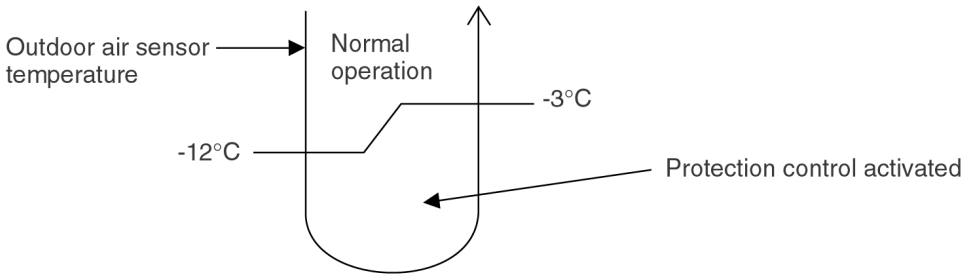
(Low outdoor ambient temperature < -12°C).

B. During low outdoor ambient temperature control activated, other compressor & outdoor fan motor control is ignored. (Apply to all operation modes.)

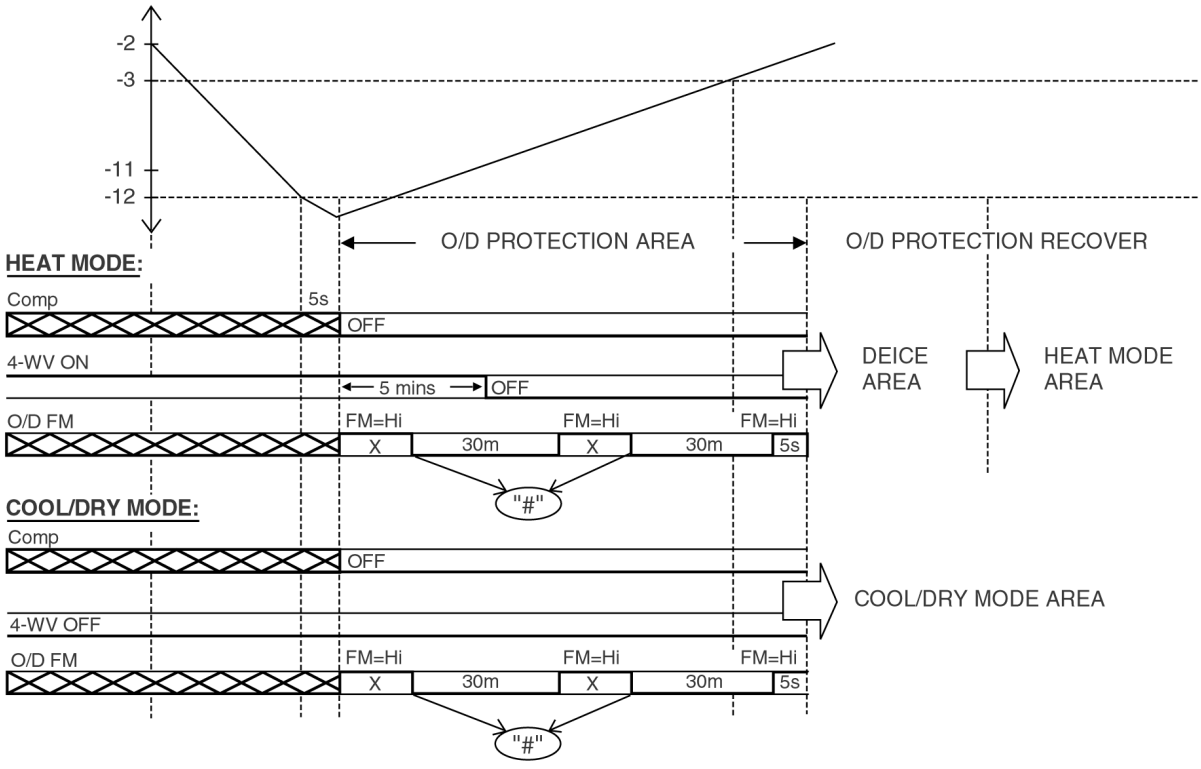
C. Basic operation

1. Protection control

Outdoor unit stop operation regardless operation mode setting.



* Detail of operation refer to timing diagram



Note:

: Fan motor off condition depends on:

a. 1 min over after FM ON. And

b. Air temperature < -3°C during 1 min.

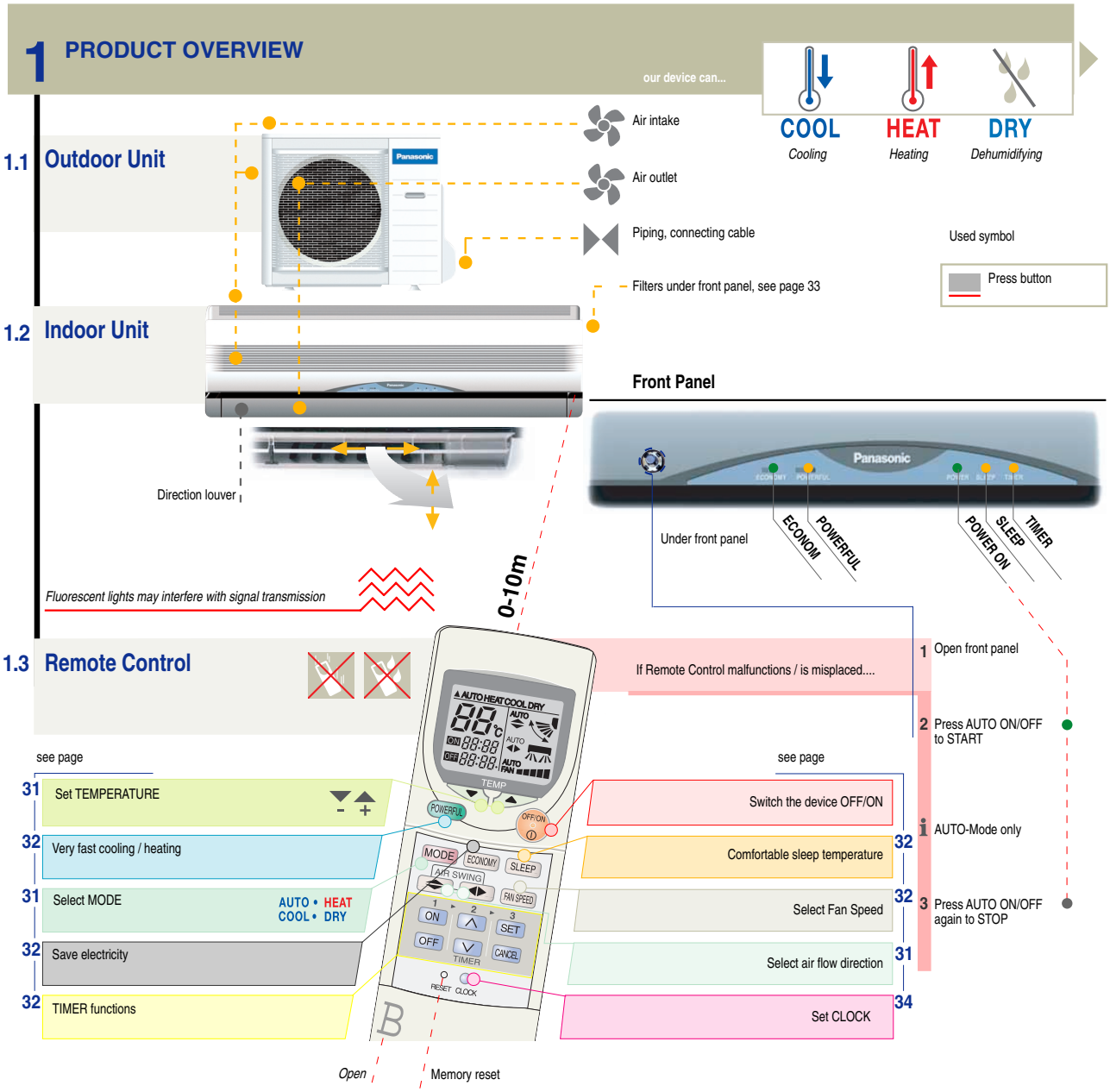
So the FM Off time is between 5 sec. to 1 min. 5 sec.

D. Indoor condition during protection control

Operation mode		I/D FM	Protection control;
Cooling		Setting speed	Compressor reverse rotation protection
Soft dry	Cooling zone	Setting speed	Compressor reverse rotation protection
	Soft dry zone	S Lo	Compressor reverse rotation protection
Heating		Speed depends on I/D piping temperature	Nil
Automatic		Depends on mode judgement. #1	

#1: I/D fan speed and protection control depends on the operation mode. Then, the condition follow operation mode in table above.

9 Operating Instructions (Canada Models)



Find on page

34 PREPARATIONS

35 TROUBLE-SHOOTING

36 SAFETY PRECAUTIONS

33 HELPFUL INFORMATION

OPERATION

Press button

START

Switch on — OFF/ON

MODE

AUTO

Automatic — Select...

Hi = +2˚C
Lo = -2˚C
= Standard

Lo-...-Hi

According to the room temperature the system automatically chooses

COOL 25˚C = Hi
DRY 22˚C = No information
HEAT 21˚C = Lo

HEAT

Heating — Select...

min. 16˚C
max. 30˚C

Recommended: ~20...24˚C

Choose the right temperature to be comfortably warm.

COOL

Cooling — Select...

min. 16˚C
max. 30˚C

Recommended: ~26...28˚C

Choose the right temperature to be comfortably cool.

DRY

Dehumidifying — Select...

min. 16˚C
max. 30˚C

Recommended: Room temperature -(1~2)˚C

Very gentle cooling fan and dehumidifying operation.

Switch off — OFF/ON

STOP

Function

Room temperature
°C
COOL (25°C)
23°C DRY (22°C)
20°C HEAT (21°C)

Set temperature 30 °C HEAT 16 °C

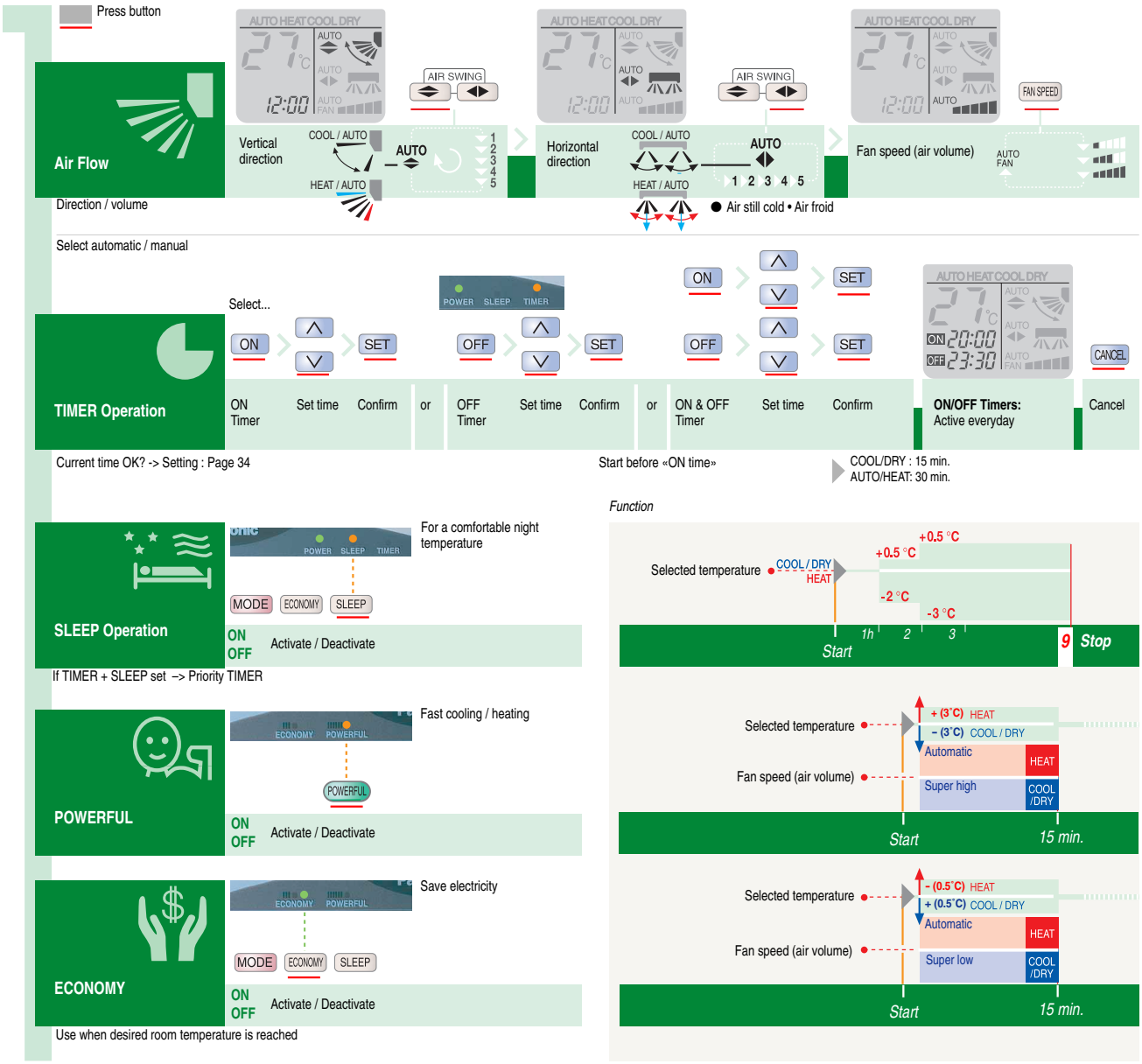
Set temperature 30 °C COOL 16 °C

Set temperature
COOL
DRY
- (1 °C)
FAN

* FAN low speed

*automatic during dehumidifying (DRY)

Additional comfort


Press button
Air Flow
AUTO HEAT COOL DRY
AIR SWING
Vertical direction
COOL / AUTO
AUTO
HEAT / AUTO
1 2 3 4 5
Horizontal direction
Fan speed (air volume)
FAN SPEED
AUTO FAN
Direction / volume
Air still cold • Air froid
Select automatic / manual
TIMER Operation
Select...
ON
SET
OFF
POWER SLEEP TIMER
ON Timer
Set time
Confirm
or
OFF Timer
ON & OFF Timer
ON/OFF Timers: Active everyday
Cancel
CANCEL
Current time OK? -> Setting : Page 34
Start before «ON time»
COOL/DRY : 15 min.
AUTO/HEAT: 30 min.
Function
SLEEP Operation
For a comfortable night temperature
MODE
ECONOMY
SLEEP
ON
OFF
Activate / Deactivate
If TIMER + SLEEP set –> Priority TIMER
POWERFUL
Fast cooling / heating
Activate / Deactivate
ECONOMY
Save electricity
Use when desired room temperature is reached
Selected temperature
COOL / DRY
HEAT
+0.5 °C
-2 °C
-3 °C
1h
2
3
Start
9
Stop
+ (3°C) HEAT
– (3°C) COOL / DRY
Automatic
Super high
Fan speed (air volume)
15 min.
– (0.5°C) HEAT
+ (0.5°C) COOL / DRY
Super low

CARE & CLEANING

ON / OFF

Soaps | Neutral household detergents (≃ pH7) | Benzene / Thinner | Scouring powder

Indoor Unit

40°C max. Wash gently

Filters * **

Filter cleaning see below

Front Panel

Remove → 40°C max. Wash gently... → + dry → Reinstall

Purifying filters

every 6 months

Remove → Clean with vaccum

Part No. CZ-SF70P / CZ-SFD70P

REPLACE every 3 years

6 hrs Expose to direct sunlight

Damaged –> replace → Reinstall

Air filters

every 2 weeks

Remove → Vacuum → 40°C max. Wash → Dry → ? Damaged –> replace → Reinstall

Part No. CWD001099

<<FRONT>>

* "Catechin" filter ** Solar Refreshing Deodorizing Filter

DIRTY FILTERS cause: unpurified air, low cooling/heating capacity, unpleasant odours, higher energy consumption

HELPFUL INFORMATION

Automatic Operation

AUTO

If remote control malfunctions / is misplaced see page 30

Lower cost

TEMP ≃ -10%
COOL +(1˚C)
HEAT –(2˚C)

* Close * Vacuum * Better performance

Use... ECONOMY SLEEP TIMER! see page 33

Thunder / Lightning

Built in surge protection, BUT SWITCH OFF power supply in case of very strong lightning

Power Failure

When power resumes...

3 - 4 Min. Random restart automatically

✓ MODE Restored

✗ TIMER Deleted -> set again

PREPARATIONS

Press button

Power supply

Installation: see enclosed installation instructions

refer to page 37

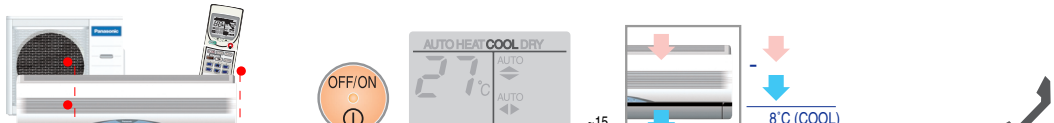
Indoor unit

OPEN front Panel → Remove AIR filters → Mount PURIFYING filters → Mount AIR filters → CLOSE front Panel → Power supply - ON

Insert batteries Set clock

Same type / ~~Rechargeable~~ → Remove cover → Insert batteries / close → Press CLOCK → Set time → **Set current time immediately** → Confirm

Pre-season inspections



Check — Fans — Batteries → START cooling or heating → Check performance → See page 35, if necessary

For end of Season

Start to dry internal parts → OFF → Power Supply - OFF → Remove batteries

Recommended inspections

- After several seasons and due to operational conditions, performance may be reduced by dust or there may be unpleasant smells.
- Consult an authorized distributor for inspection!

TROUBLESHOOTING

OK?

✓ No problem

1	Operation delayed for 3 minutes after successful restart	▸ Self protecting procedure	✓
2	It sounds like water flowing...	▸ Caused by refrigerant flow inside	✓
3	Steam seems to emerge from the indoor unit	▸ Condensation effect due to cooling	✓
4	With setting «FAN AUTO» indoor fan sometimes stops	▸ Odour eliminating procedure	✓
5	Outdoor unit emits water/steam	▸ Condensed moisture due to cooling	✓
6	Does not heat for 12 min.– «POWER» flashes	▸ Defrosting Outdoor unit, max. 12 min.	✓
7	The indoor fan switches ON/OFF while heating	▸ Avoids unintended cooling effect	✓

! In case of...

- Abnormal noise during operation
- Water / foreign matter has entered the Remote Control
- Water leak from Indoor Unit
- Switches / buttons do not operate properly
- Circuit breaker switches off frequently
- Power cord become unnaturally warm

TURN OFF / POWER SUPPLY

CALL authorized distributor

OK

1	No Operation	▸ Circuit breaker tripped?	▸ TIMER used correctly?	
2	Remote Control / display doesn't work	▸ Batteries empty?	▸ Batteries correctly inserted? See page 34	
3	Noise too loud	▸ Installation work slanted?	▸ Front grille / panel closed properly?	
4	Cooling / heating efficiency low	▸ Temperature set correctly?	▸ Windows / doors closed?	▸ Filters cleaned / replaced?
		▸ Outdoor unit obstructed?	▸ Intake / outlet ventilators obstructed?	

SAFETY PRECAUTIONS

Before operating, read the safety precautions thoroughly!

EMERGENCY!

SOS Immediately disconnect from AC connections

Use only for...

COOL Cooling

HEAT Heating

DRY Dehumidifying

NEVER use this unit for purposes other than those listed in these Operating Instructions. In particular, do not use it for the preservation of food.

Installation

Install according to installation instructions

DO NOT install in potentially explosive environment

By a qualified technician

Connect drain hose properly

Electrical connection

Contact dealer / specialist for mains connection and...

Use only dedicated outlet

Ensure proper grounding

If the AC cord is damaged or needs replacement, it must be replaced by a qualified technician

POWER SUPPLY	
Time Delay Fuse : 20 Amps	Rated Volts : 208/230V

Field wiring connection

By a qualified technician

Operation

NEVER modify/damage mains cables/connectors

DO NOT operate with wet hands

DO NOT stay in the stream of cold air for a long period of time

Ventilate the room periodically

DO NOT place anything on the unit

DO NOT insert fingers or objects into the unit

Switch off the power supply if the unit is not used for a long period.

SAFETY PRECAUTIONS & FEATURES

Defects

Defect/suspicion of malfunction? Discontinue use immediately!

DO NOT repair by yourself, refer servicing to a qualified servicing technician

Cleaning

OFF power supply (connector or breaker)

DO NOT wash, see page 33

Waste disposal

Uninstalling and disposal of the unit ONLY by dealer / specialist

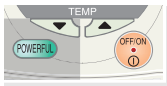
Packaging recyclable

Indoor Unit / Outdoor Unit

Operational Condition [°C]

	Wet Bulb min	Wet Bulb max		Dry Bulb min	Dry Bulb max
Cooling	11	23		16	32
	11	26		16	43
Heating	-6	18		-5	24

refer page



Illuminating button: convenient in the dark — 30

Auto Restart Control: After power failure, restarts automatically when power resumes — 33

AUTO

Automatic Operation: indoor temperature is gauged to select the optimum mode — 31

Sleep Mode: for a pleasant night temperature — 32

Economy Mode: reduce your electricity cost — 32

Powerful Mode: reaches the desired room temperature quickly — 32

Removable Front Panel: for quick and easy cleaning, washable — 33

"Catechin" filter: Trapping dust, tobacco, smoke / tiny particles, it inhibits the growth of bacteria/viruses — 33/34

Solar Refreshing Deodorizing Filter: Removing unpleasant odours — 33/34

Manufactured by:
MATSUSHITA INDUSTRIAL CORP. SDN. BHD.
Lot 2, Persiaran Tengku Ampuan, Section 21, Shah Alam
Industrial Site Selangor, Malaysia

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
website: http://www.panasonic.co.jp/global/

PANASONIC CANADA INC.
website: http://www.panasonic.ca

10 Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 55 N.m (5.5 kgf.m) 65 N.m (6.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of death or serious injury.

⚠ **CAUTION**	This indication shows the possibility of injury or damage to properties.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ **WARNING**
1. Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
2. Install according to these installation instruction only. If installation is defective, it will cause water leakage, electrical shock or fire.
3. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
4. Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
5. For installation work, follow all electrical, building, plumbing, local codes, regulation and these installation instructions. If electrical circuit capacity is not enough or a defect found in electrical work, it will cause electrical shock or fire.
6. Use the UL listed or CSA approved AWG16 wire (or heavier wire) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the wire so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
7. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
8. When carrying out piping connection, take care not to let air substances other than the specified refrigerant enter into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.

⚠ CAUTION

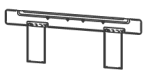
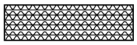
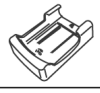
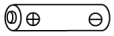
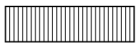
1. This equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. If gas leaks and accumulates at surrounding of the unit, it may cause fire.

3. Carry out drainage piping as mentioned in installation instructions. If drainage is not properly, water may enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.
   Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2. Power supply connection to the room air conditioner.
   Connect the power supply of the room air conditioner to the mains.
   Power supply point should be in an easily accessible place for power disconnection in case of emergency.
   Power supply connection to a circuit breaker for the permanent connection. Use an approved 15A fuse or circuit breaker for the permanent connection.
   It must be a double pole switch with a minimum 3 mm contact gap.
3. Do not release refrigerant.
   Do not release refrigerant during piping work for installation, reinstallation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.
   Two people may be required to carry out installation.
5. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
6. It is not possible to carry out installation when the outdoor unit temperature reach -12°C.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	6	Solar refreshing deodorizing filter 	1
2	Installation plate fixing screw	6	7	Remote Control holder 	1
3	Remote control	1	8	Remote Control holder fixing screw	2
4	Battery 	2	9	Drain elbow	1
5	Air purifying filter 	1			

Applicable piping kit

CZ-52F5, 7, 10AN (CS-A24CKPG)

SELECT THE BEST LOCATION

INDOOR UNIT

- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- Should be a place where air circulation in the room is good.
- Should be a place where drainage can be easily done.
- Should be a place where noise prevention is taken into consideration.
- Should not be installed near the doorway.
- Should be installation in adequate space from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit should be at least 2.3m.

OUTDOOR UNIT

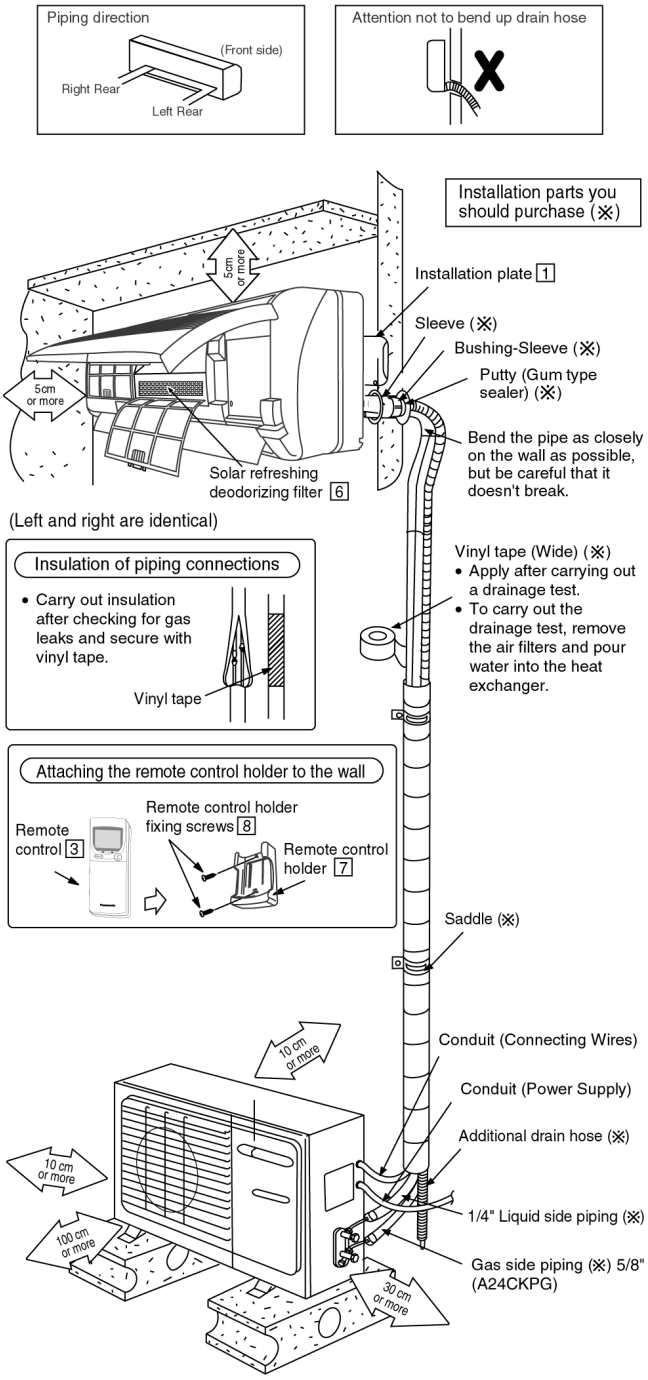
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- Keep animals and plants away from the unit as they may be affected by the hot air discharged.
- Keep the spaces (indicated by arrows) from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over 7.5m, additional refrigerant should be added as shown in the table.

Model	Piping size		Rated Length m	Max. Elevation m	Max. Piping Length m	Additional Refrigerant g/m
	Gas	Liquid				
CS-A24CKPG	5/8"	1/4"	5 m	20 m	25 m	30 g/m

Example: For CS-A24CKPG

If the unit is installed at a 10m distance, the quantity of additional refrigerant should be 75g...(10 - 7.5)m × 30g/m = 75g

Indoor/Outdoor Unit Installation Diagram


Piping direction
(Front side)
Right Rear
Left Rear
Attention not to bend up drain hose
Installation parts you should purchase (※)
5cm or more
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
Solar refreshing deodorizing filter 6
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks and secure with vinyl tape.
Vinyl tape
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Attaching the remote control holder to the wall
Remote control 3
Remote control holder fixing screws 8
Remote control holder 7
Saddle (※)
10 cm or more
Conduit (Connecting Wires)
Conduit (Power Supply)
Additional drain hose (※)
100 cm or more
1/4" Liquid side piping (※)
Gas side piping (※) 5/8" (A24CKPG)
30 cm or more

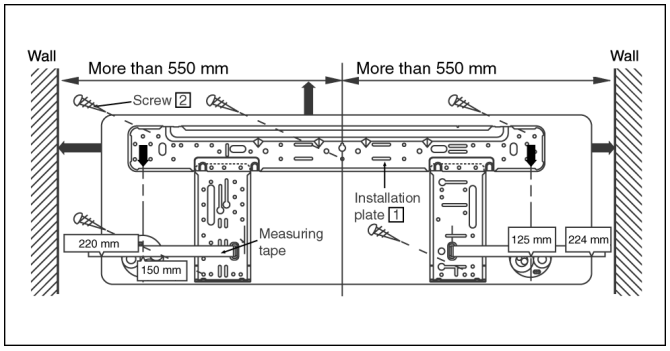
- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION (Refer to "Select the best location" section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall must be strong and solid enough to prevent it from the vibration.



The wall must be able to with stand the weight of the unit.

The centre of installation plate should be at more than 550 mm at right and left of the wall.

The distance from installation plate edge to ceiling should be more than 67 mm.

From installation plate left edge to unit's left side is 47 mm.

From installation plate right edge to unit's right is 73 mm.

Ⓑ : For left side piping, piping connection for liquid should be about 126 mm from this line.
: For left side piping, piping connection for gas should be about 174 mm from this line.
: For left side piping, piping connecting wire should be about 984 mm from this line.

1. Mount the installation plate on the wall with 5 screws or more.
   (If mounting the unit on a concrete wall consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

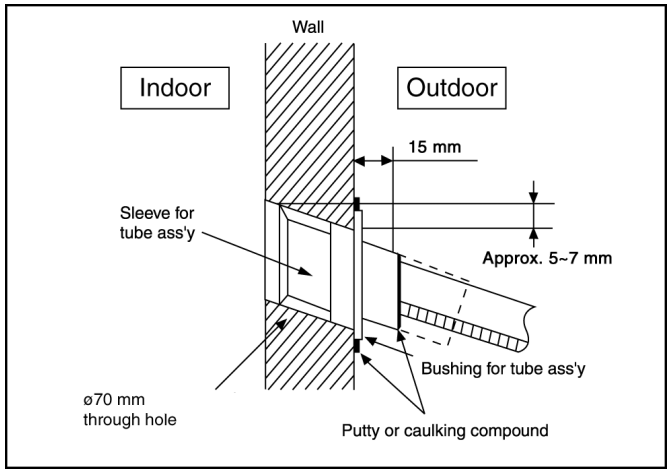
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is to put measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

Caution
When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



10.2.4. INDOOR UNIT INSTALLATION

1. **For the right rear piping**

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Secure the Indoor Unit
↓
Insert the connecting wire

2. For the embedded piping

Replace the drain hose

↓

Bend the embedded piping

↓

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

↓

Cut and flare the embedded piping

↓

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting wire into Indoor Unit

↓

- The inside and outside connecting wire can be connected without removing the front grille.

Connect the piping

↓

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

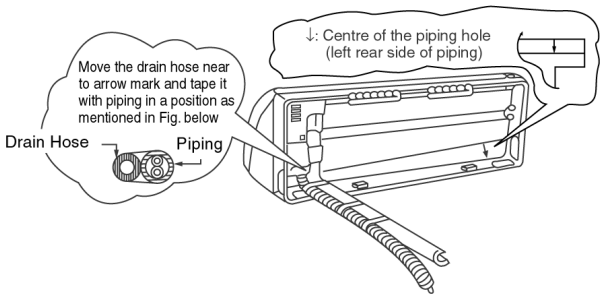
Insulate and finish the piping

↓

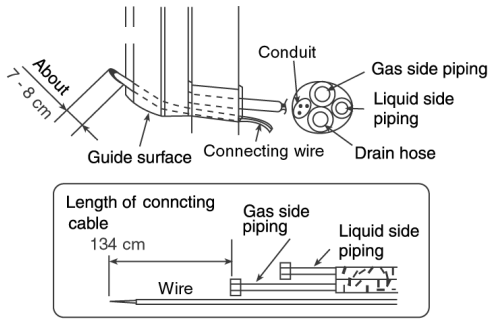
- Please refer to Indoor/Outdoor Unit Installation Diagram.

Secure the Indoor Unit

Pull out the piping and drain hose


↓: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping

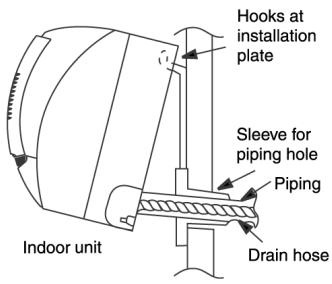
Insert the connecting wire



(This can be used for left rear piping also.)

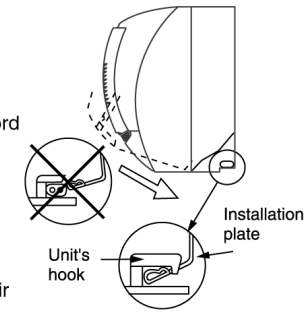
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.

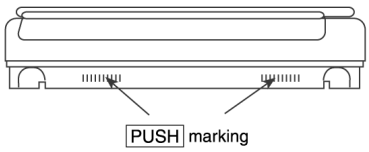


Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (a click will be heard).

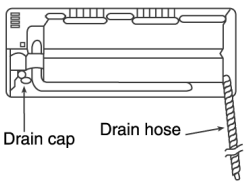


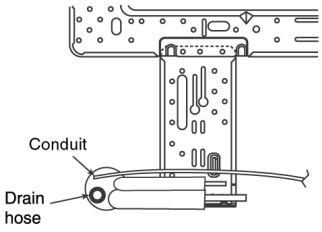
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.



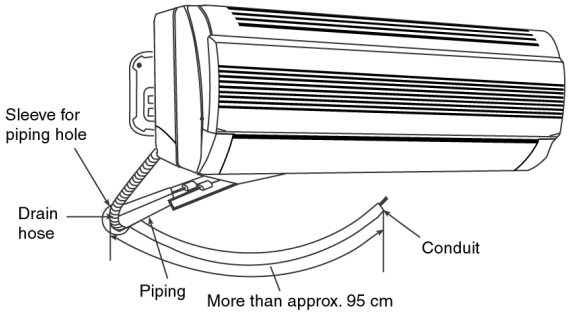
Exchange the drain hose and the cap

Refer view for left piping installation

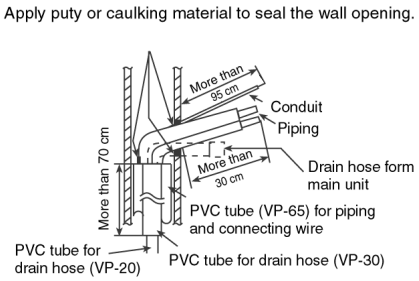


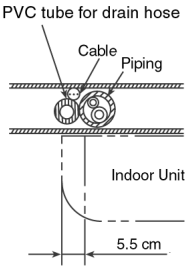


Adjust the piping slightly downwards



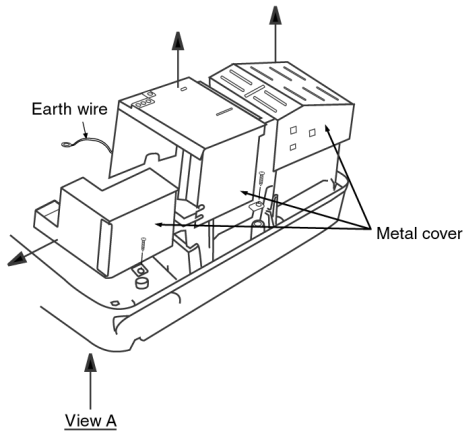
• How to pull the piping and drain hose out, in case of the embedded piping.


Apply puty or caulking material to seal the wall opening.
More than 35 cm
Conduit
Piping
More than 70 cm
More than 30 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting wire
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)

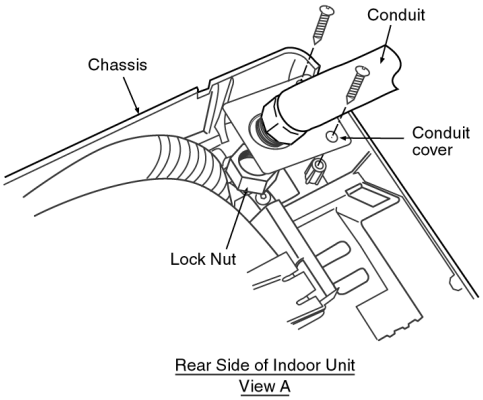


10.2.5. INDOOR UNIT ELECTRICAL WIRING

1. Remove the control board metal cover.



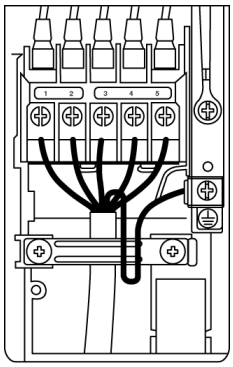
2. Unscrew the conduit cover & fix the conduit connector to conduit cover with lock nut, then secure it against chassis.



3. Connecting wire between indoor unit and outdoor unit should be UL listed or CSA approved 6 × AWG16 wire.
   - Ensure the color of wires of outdoor unit and the terminal number. are the same as the indoor's respectively.
   - Earth lead wire should be longer than the other lead wires as shown in the figure for the electrical safety in case the cord slips out from the anchorage.

CS/CU-A24CKPG

Terminals on the indoor unit	1	2	3	4	5	⏚
Color of wires						
Terminals on the outdoor unit	1	2	3	4	5	⏚



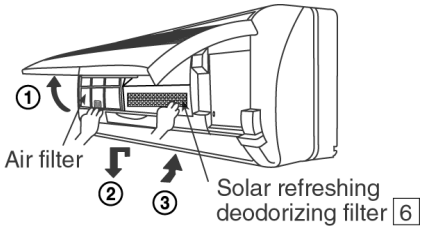
A24CKPG

- Secure the wire onto the control board with the holder (clamper).

4. After completed wiring connection, fix back the metal cover to the original location.

INSTALLATION OF AIR PURIFYING FILTERS

1. Open the front panel.
2. Remove the air filters.
3. Put air purifying filters (left) and solar refreshing deodorizing filter (right) into place as shown in illustration below.

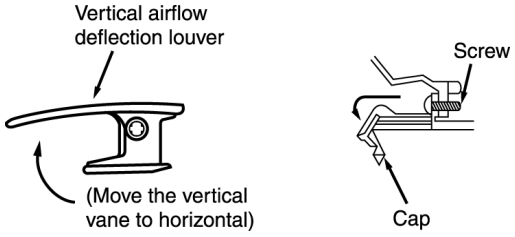


HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. Open the intake grill and remove the screw at the front of the front grille.
2. Set the vertical airflow direction louver to the horizontal position.
3. Slide down the three caps on the front grille as shown in the illustration below, and then remove the three mounting screws.
4. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.



AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE

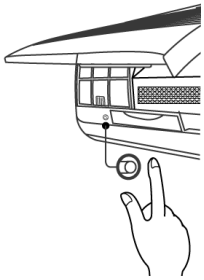
   The Auto operation will be activated immediately once the Auto Switch is pressed.

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec.. A "beep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

   The ON/OFF of Remote Controller receiving sound can be change over by pressing the "AUTO" Switch continuously for 10 sec. and above. A "beep", "beep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" change over of remote control receiving sound.



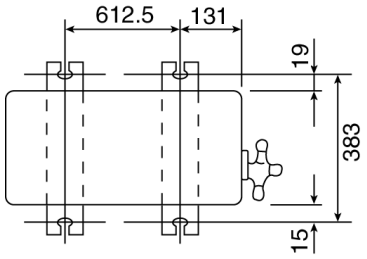
10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION (Refer to "Select the best location" section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).
2. When installing on roof, please take into consideration strong wind and earthquakes. Please fasten the installation stand firmly with bolt or nails.



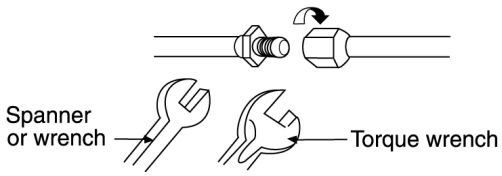
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



MODEL	Piping size (Torque)	
	Gas	Liquid
CS-A24CKPG	5/8" (65 N.m)	1/4" (18 N.m)

Connecting The Piping To Outdoor Unit

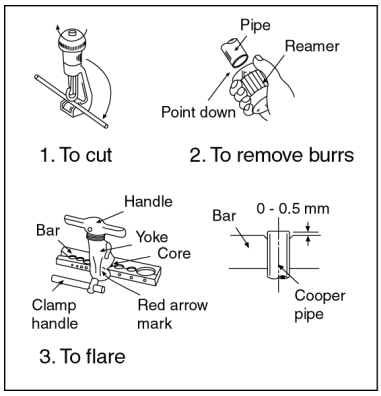
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

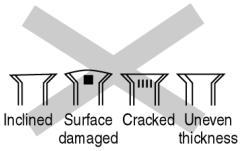
CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs are not removed, gas leakage may be caused.

   Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



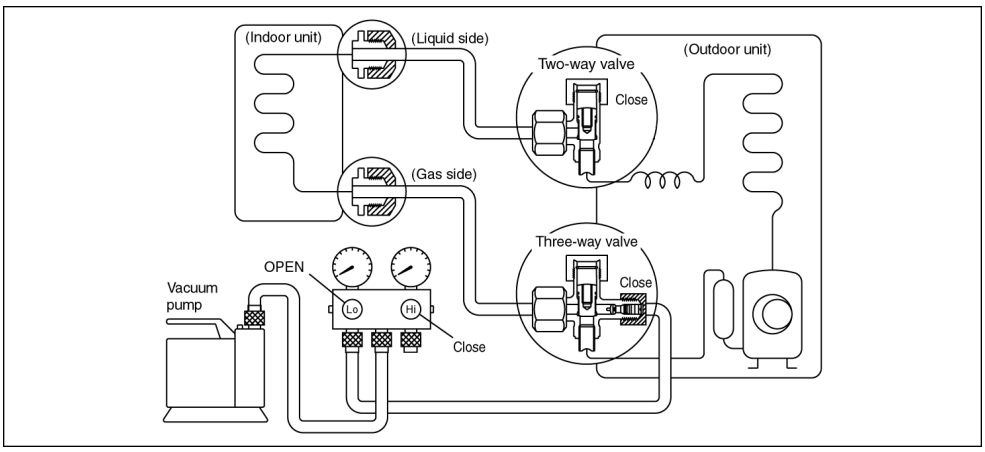
■ Improper flaring ■



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



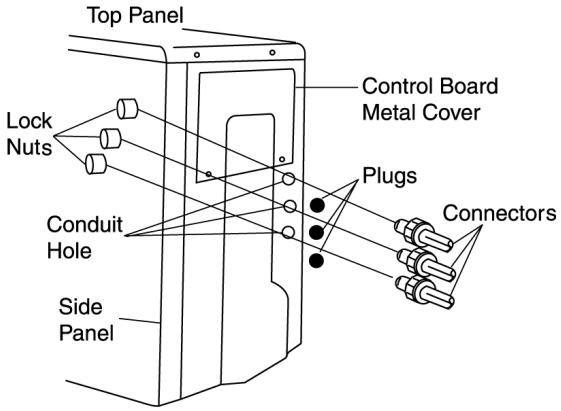
1. Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump and vacuum pump adaptor.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
4. Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.

   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port caps of the 3-way valve at a torque of 18 N.m with a torque wrench.
7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.
   - Be sure to check for gas leakage.

CAUTION

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation. Take care of the liquid refrigerant, it may cause frostbite.

10.3.5. OUTDOOR UNIT ELECTRICAL WIRING



1. Remove Top Panel.
2. Remove Control Board Cover.
3. Remove Plugs.
4. Fix the conduit connectors to the conduit holes with lock-nuts, then secure them.
5. Connecting wire between indoor unit and outdoor unit should be UL listed or CSA approved 6 × AWG16 wire.

CS/CU-A24CKPG

Terminals on the indoor unit	1	2	3	4	5	⏚
Color of wires						
Terminals on the outdoor unit	1	2	3	4	5	⏚

6. Secure the wire onto the control board with the holder (clamper).
7. Wire connection to the power supply (208/230V 60 Hz) through circuit breaker.
   - Connect the UL listed or CSA approved wires (AWG12) to the terminal board, and connect the other end of the wires to circuit breaker.

Terminals on the outdoor unit	L1	L2	⏚
Color of wires			
Terminals on the circuit breaker	(L1)	(L2)	⏚

Note: Secure the wires onto the control board with the holder (clamper).

8. After completing wiring connections, reattach the control board cover and the top panel to the original position with the screws.

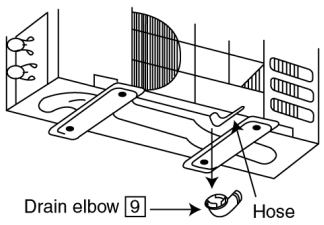
10.3.6. PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or more.

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, as the drain water will freezes and the fan will not rotate.

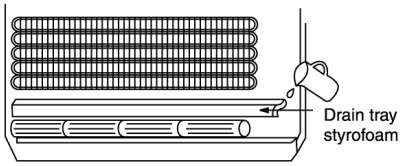
CU-A24CKP6G



Install the hose at an angle so that the water smoothly flows out.

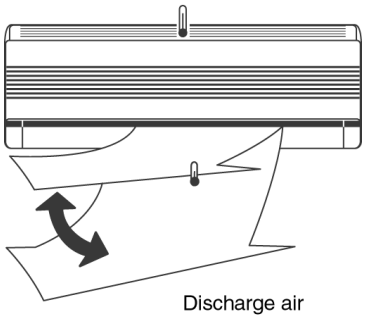
CHECK THE DRAINAGE

- Open front panel and remove air filters.
  (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.



EVALUATION OF THE PERFORMANCE

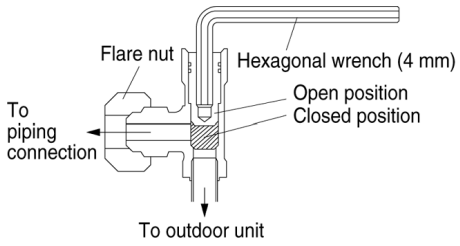
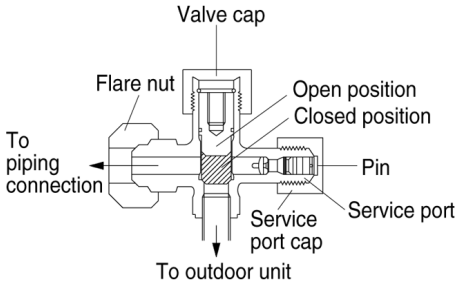
- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting wire being fixed to terminal board firmly?
- ☐ Is the connecting wire being clamped firmly?
- ☐ Is the drainage OK?
  (Refer to “Check the drainage” section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?
- ☐ Is the air purifying filter installed?

11 2-way, 3-way Valve

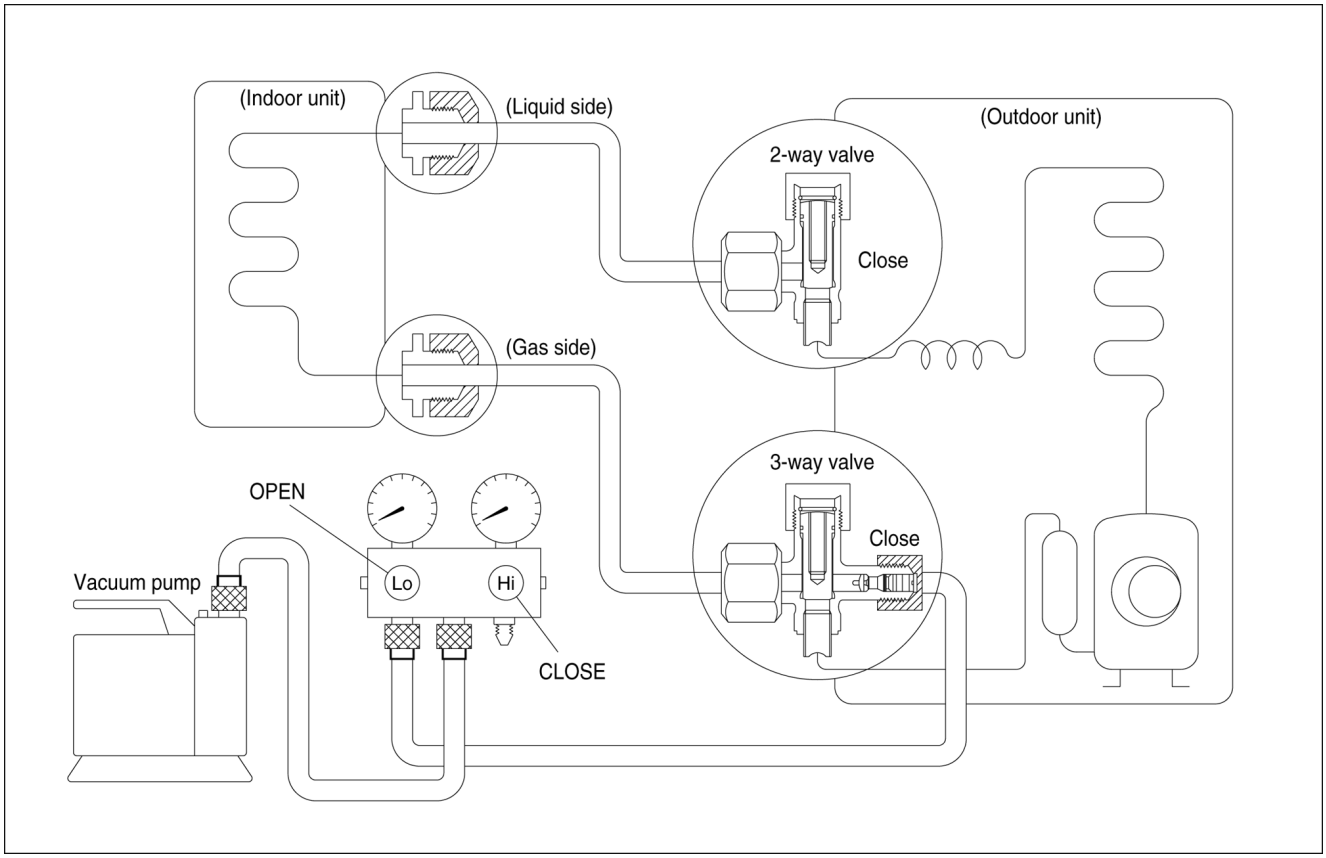
	2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
			
Works	Shaft Position	Shaft Position	Service Port
Shipping	Close (With valve cap)	Close (With valve cap)	Close (With cap)
Evacuation (Installation and Re-installation)	Close (Counter-Clockwise)	Close (Clockwise)	Open (Push-pin)
Operation	Open (With valve cap)	Open (With valve cap)	Close (With cap)
Pumping down (Transferring)	Close (Clockwise)	Open (Counter-Clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open	Open	Open With vacuum pump
Gas charging (Servicing)	Open	Open	Open (With charging cylinder)
Pressure check (Servicing)	Open	Open	Open (Connected manifold gauge)
Gas releasing (Servicing)	Open	Open	Open (Connected manifold gauge)

11.1. Evacuation of the Equipment (For Europe & Oceania Destination)

11.1.1. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of a 3-way valve.**
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto the 2-way and 3-way valves.**
   - Be sure to check for gas leakage.

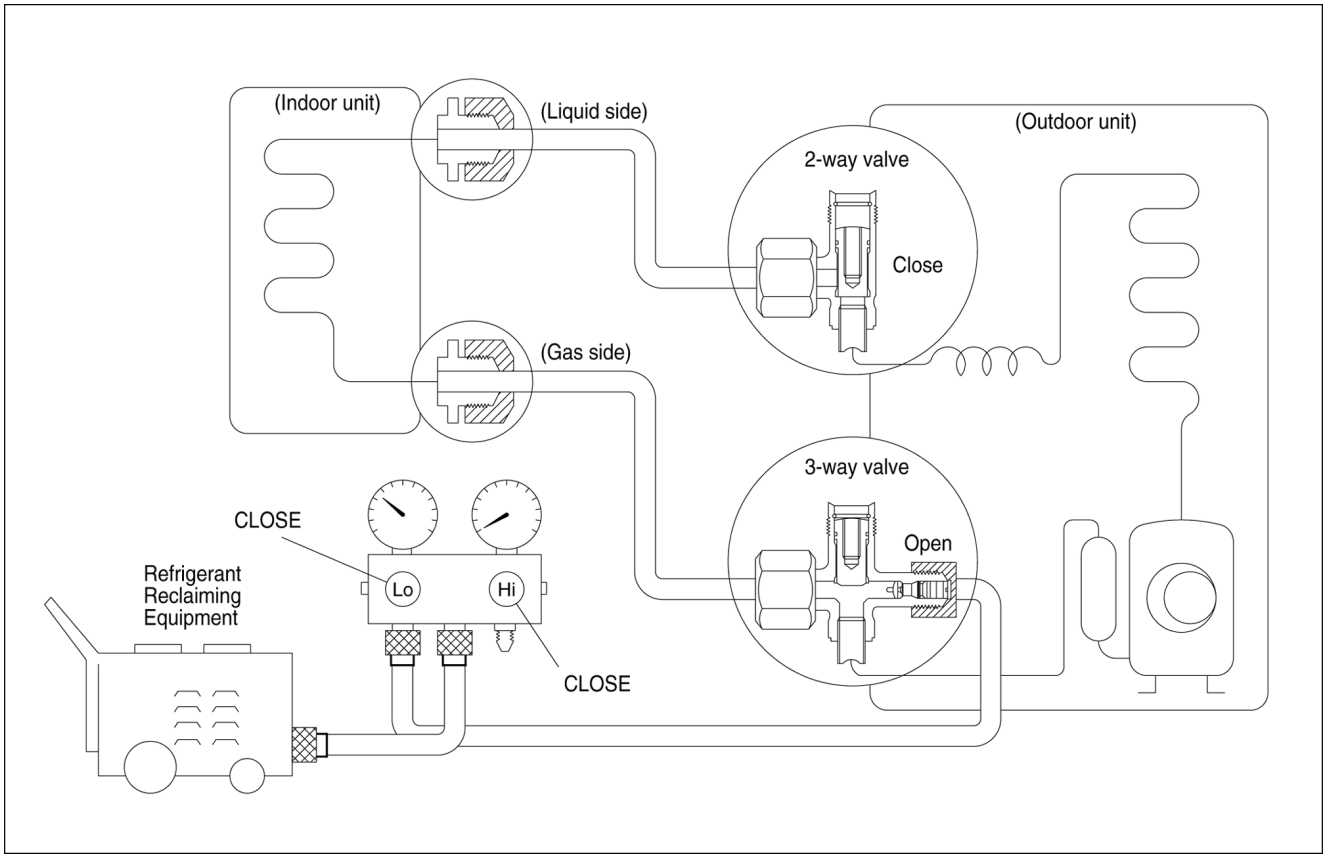
Caution

If gauge needle does not move from 0 cmHg to -76 cmHg in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (3).

If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.2. Pumping down



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the opened position.**
   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.
2. **Operate the unit for 10 to 15 minutes.**
3. **Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**
   - Connect the charge hose with the push pin to the Gas service port.
4. **Air purging of the charge hose.**
   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. **Set the 2-way valve to the closed position.**
6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 MPa (0 kg/cm^{2}G).**

   If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control P.C.B.

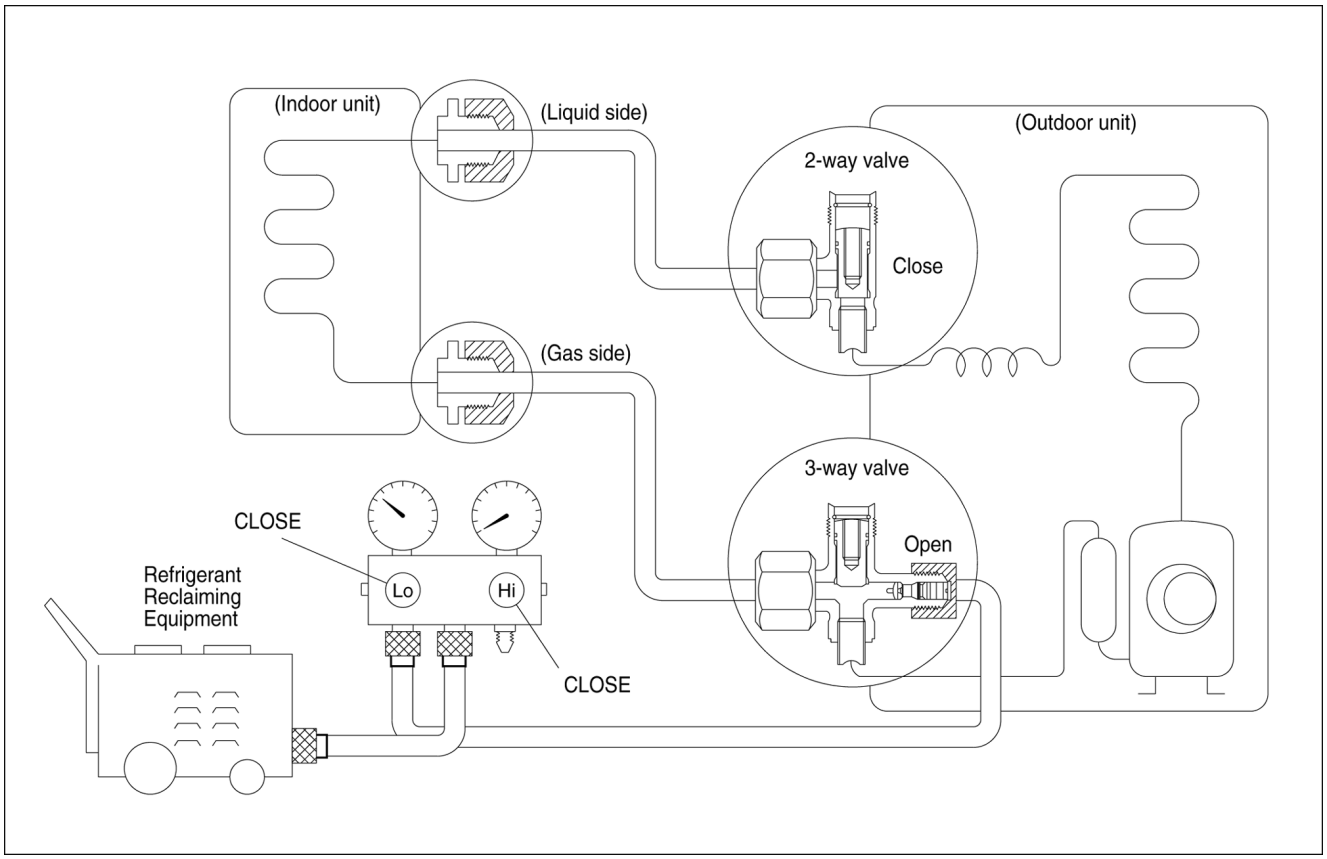
   (Simply press the pumping down button if it is equipped.)

   So that the unit can be operated.
7. **Immediately set the 3-way valve to the closed position.**
   - Do this quickly so that the gauge ends up indicating 0.1 MPa (1 kg/cm^{2}G) to 0.3 MPa (3 kg/cm^{2}G).
8. **Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.**
9. **Disconnect the charge set, and mount the 2-way and 3-way valve's stem caps and the service port caps.**
   - Use a torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.
10. **Disconnect pipes from indoor unit and outdoor unit.**

11.1.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.**
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from 3-way valve service port, and then discharge the refrigerant until low side (gas side) gauge needle indicates 0.3 MPa (3 kg/cm^2).**
7. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 2-way and 3-way valves.**
   - **BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.**
   - Purge the air from charge set's centre hose.
   - Be sure to check for gas leakage.

Caution

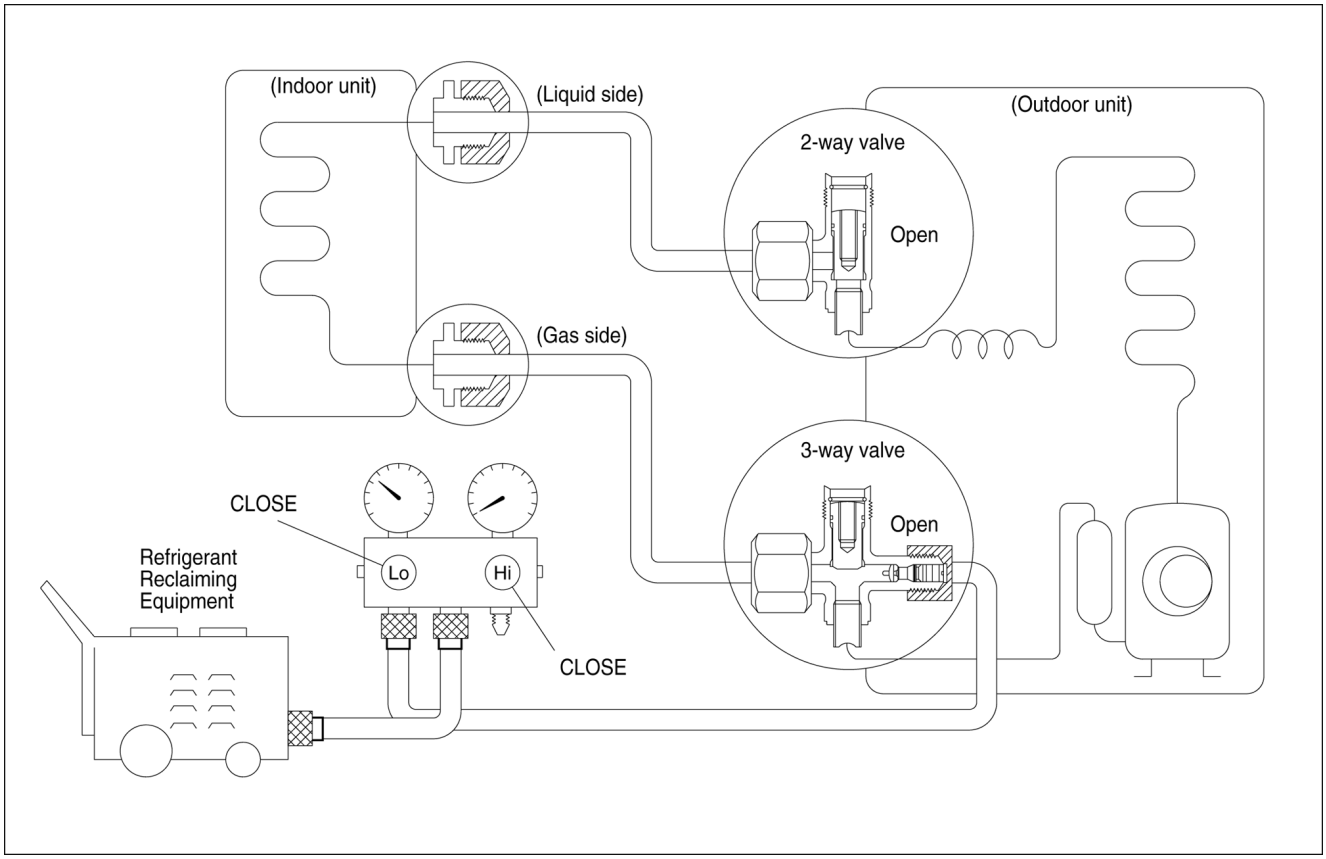
If gauge needle does not move from 0 MPA (0 cmHg) to -0.1 MPa (-76 cmHg) in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step 3.

If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.4. Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)

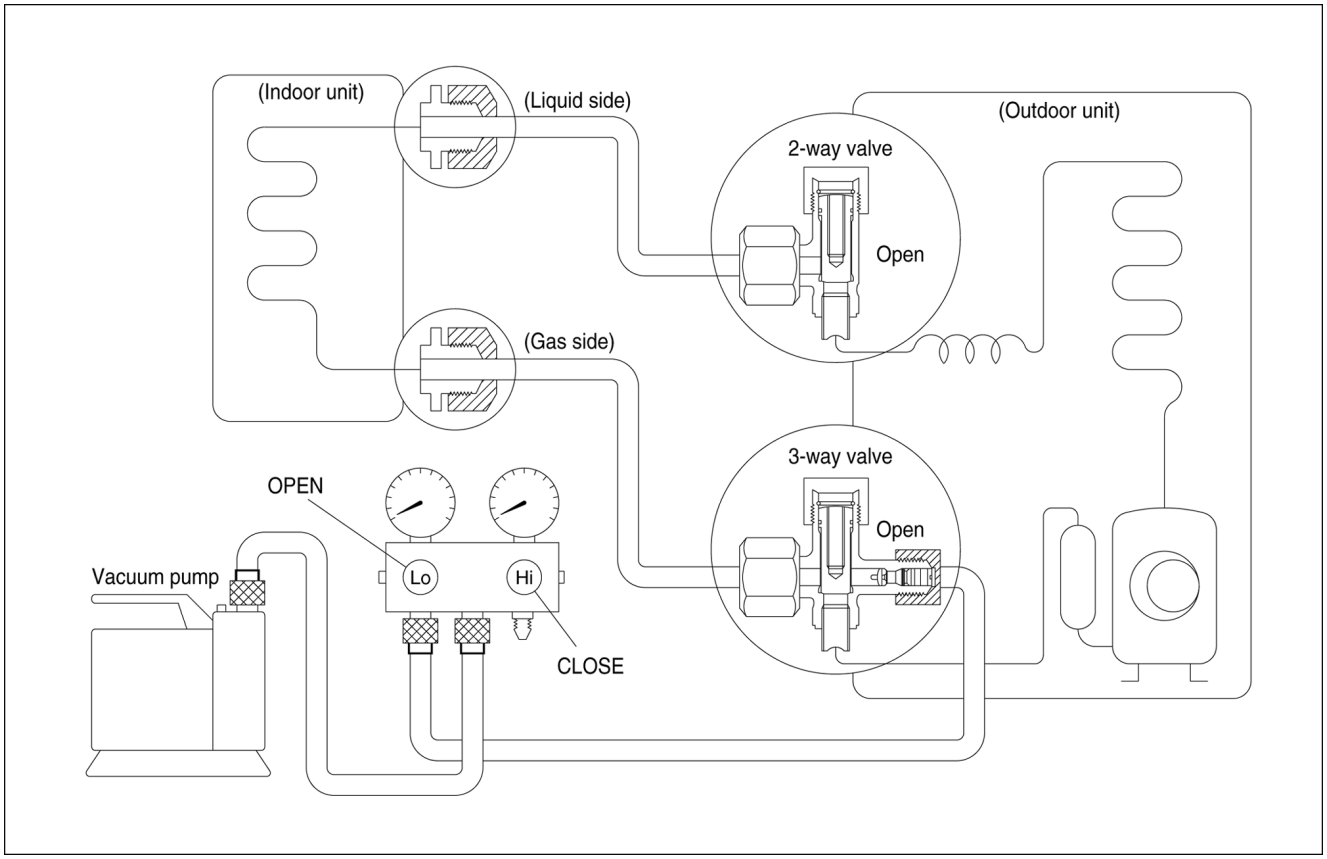


Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the open position.**
2. **Connect the charge set to the 3-way valve's service port.**
   - Leave the valve on the charge set closed.
   - Connect the charge hose with the push-pin to the service port.
3. **Connect the charge set's centre hose to refrigerant reclaiming equipment.**
   - Purge the air from charge hose.
4. **Open the valve (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G).**
   - If there is no air in the refrigeration cycle (the pressure when the air conditioner is not running is higher than 0.1 MPa (1 kg/cm^{2}G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 km/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G). If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.
5. **Turn on refrigerant reclaiming equipment.**

11.1.5. Evacuation

(No refrigerant in the refrigeration cycle)



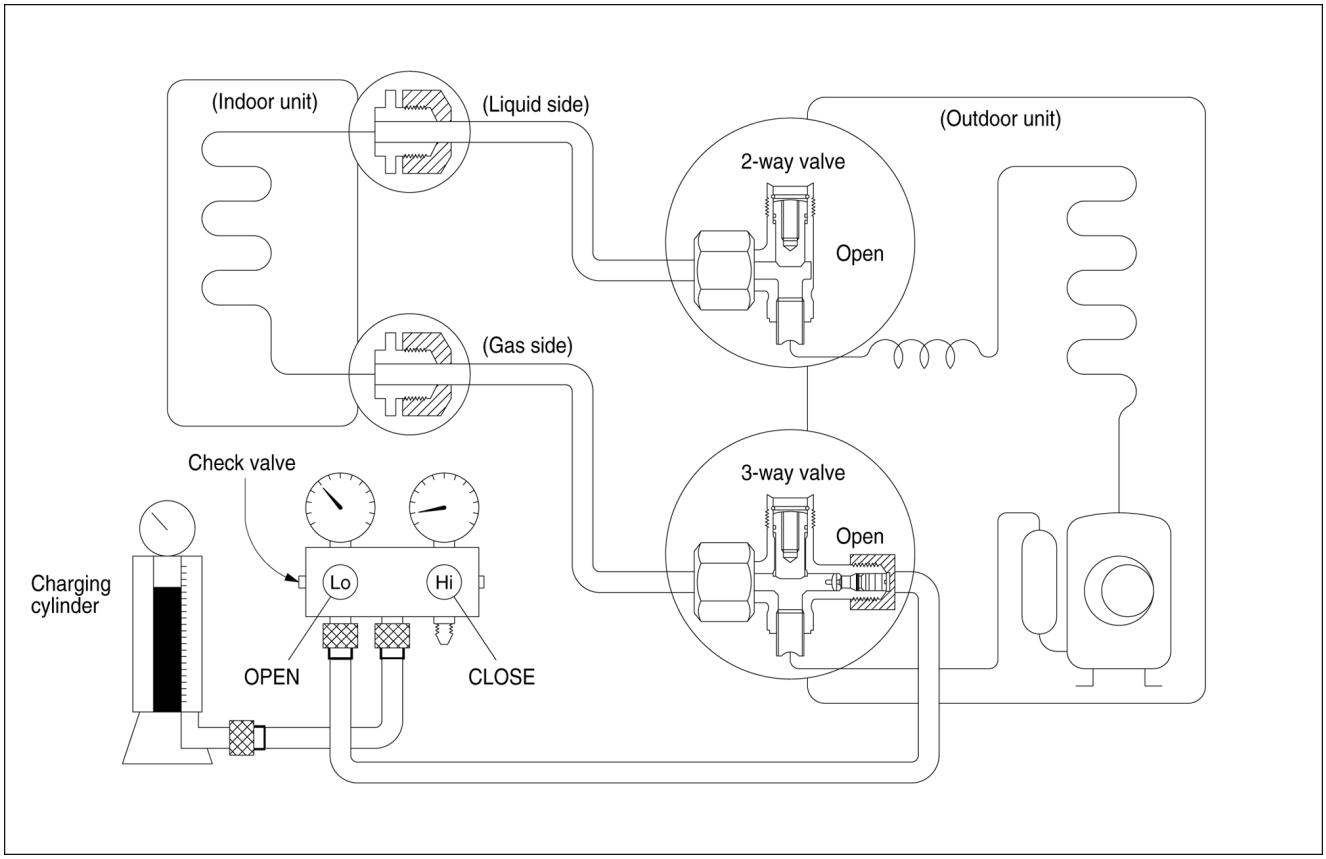
Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Evacuation for approximately one hour.**
   - Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]
3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**
4. **Disconnect the charge hose from the vacuum pump.**
   - Vacuum pump oil

     If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.1.6. Gas charging

(After Evacuation)



Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
2. **Purge the air from the charge hose.**
   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**
   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. **Immediately disconnect the charge hose from the 3-way valve's service port.**
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. **Mount the valve stem caps and the service port cap.**
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12 Servicing Information

Caution:
- Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40°C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 10°C.
- Pb free solder will tend to splash when heated too high (about 600° C).

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:

   - Open the Intake Grille and remove the screw at the front of the Front Grille. (Fig. 1)
   - Remove the 3 caps and 3 screws at the bottom of the Front Grille. (Fig. 1)
   - Remove the Front Grille by releasing the 3 hooks at the top of the Front Grille. (Fig. 1)

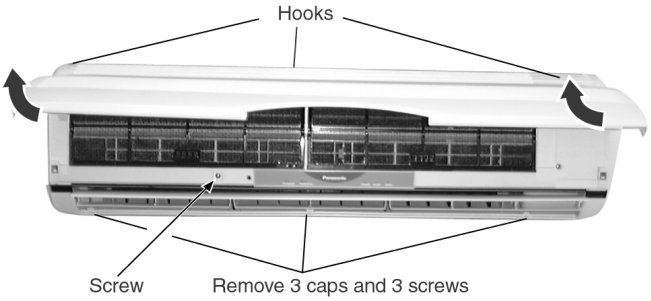


Fig. 1

   - Unhook the tabs at the Control Board to remove the Control Board Cover. (Fig. 2)

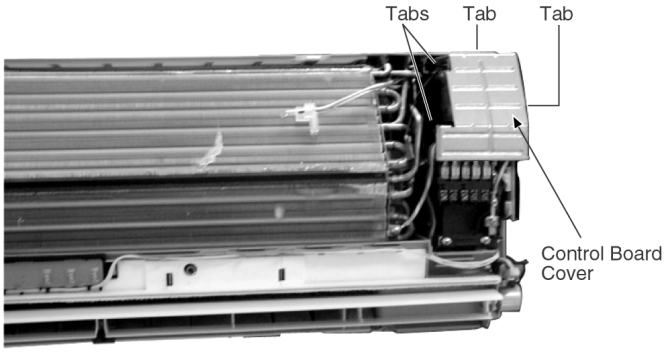


Fig. 2

2. To remove the Electronic Controllers:
   - Release the 2 Particular Piece. (Fig. 3)
   - Release the CN-REC/DISP connectors. (Fig. 4)
   - Release the CN-TH connector. (Fig. 4)
   - Release the CN-MAIN connector. (Fig. 4)
   - Release the CN-001 connector. (Fig. 4)
   - Release the CN-002 connector. (Fig. 4)
   - Release the CN-STM1 connector. (Fig. 4)
   - Release the CN-STM2 connector. (Fig. 4)
   - Release the hooks that hold the Electronic Controller. (Fig. 3)

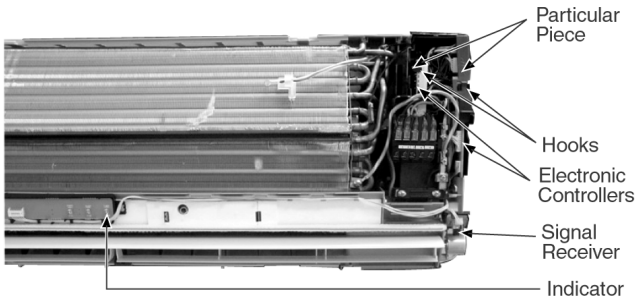


Fig. 3

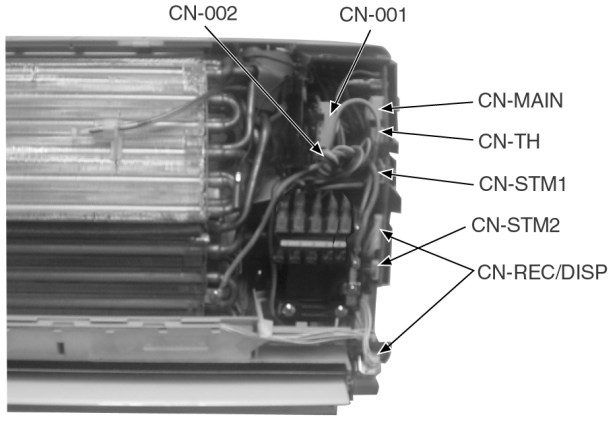


Fig. 4

12.2. Cross Flow Fan Indoor and Fan Motor Removal Procedures

1. In order to remove the Cross Flow Fan and Indoor Fan Motor, Control Board need to be taken out by releasing all the connectors as indicated below.
   a. Release the Earth Wire screw. (Fig. 5)
   b. Release the Intake Air Sensor. (Fig. 5)
   c. Release the Piping Sensor. (Fig. 5)
   d. Release the CN-REC/DISP connectors. (Fig. 5)
   e. Release the CN-STM1 connector. (Fig. 5)

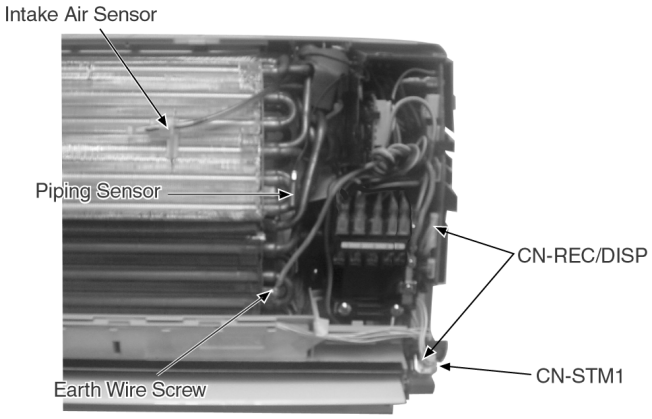


Fig. 5

2. Pull out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 6)

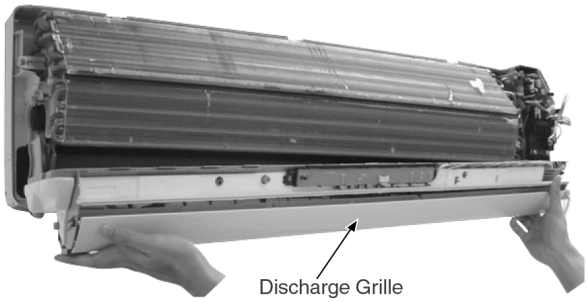


Fig. 6

3. Removing the right and left screws. (Fig. 7)

4. By pressing down the hook at the left and pushing up the hook at the right, you will be able to remove the Control Board. (Fig. 7)

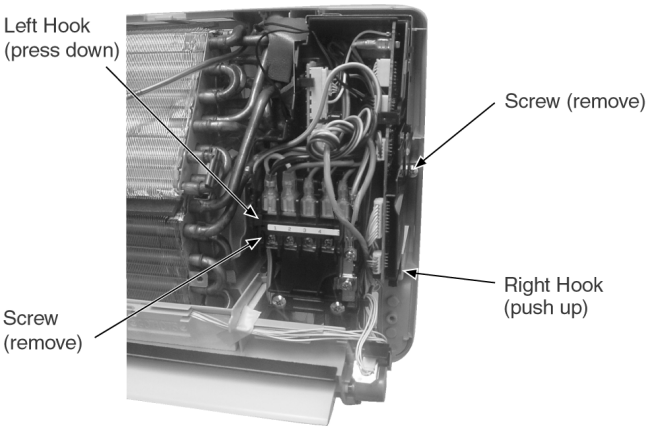


Fig. 7

5. Remove the screw at the Cross Flow Fan. (Fig. 8)

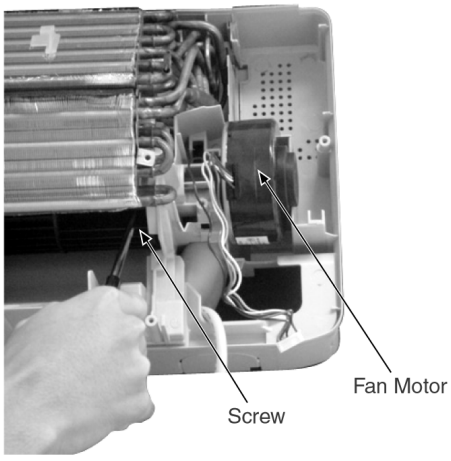


Fig. 8

6. Remove the Bearing. (Fig. 9)

7. Remove the screws at the left of the Evaporator. (Fig. 9)

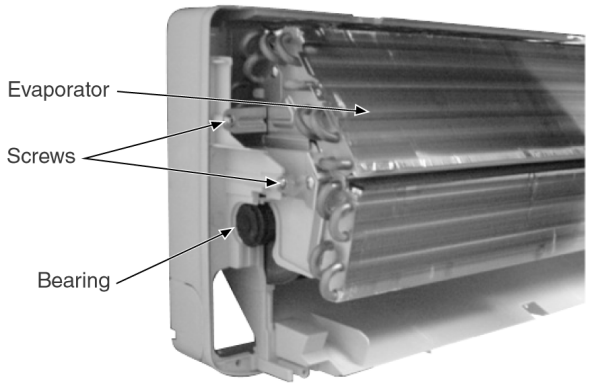


Fig. 9

8. Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 10).

REMINDER - To reinstall the Fan Motor, put it back in place, adjust the position of the Fan Motor's leadwire appropriately as shown in the Fig. 8 before installing the Cross Flow Fan.

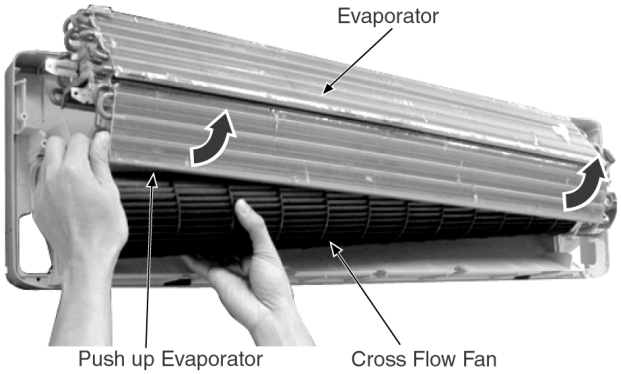
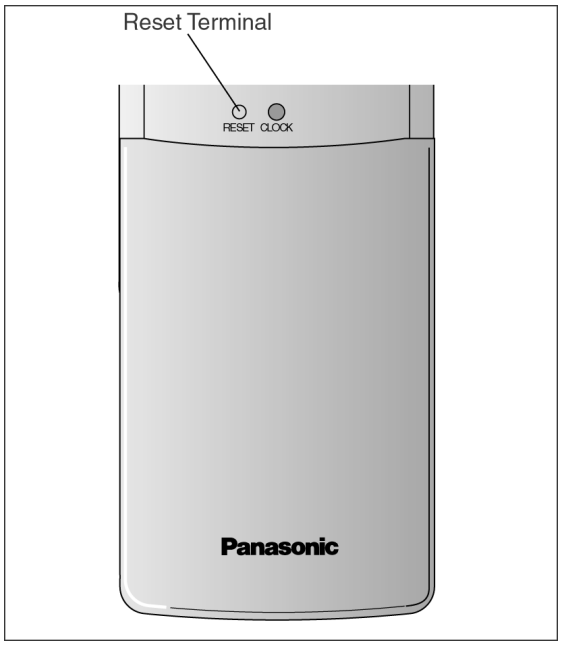


Fig. 10

- **Remote Control Reset**

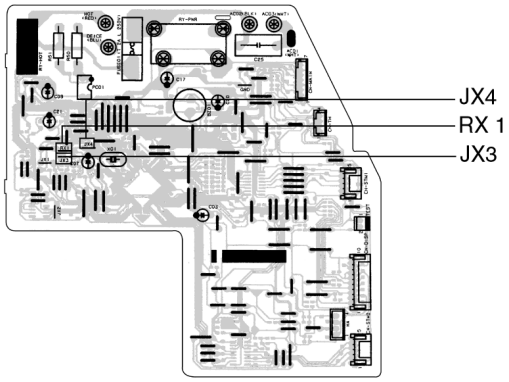
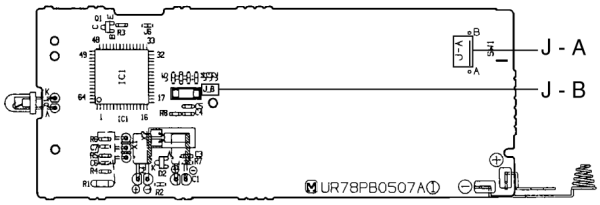
When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

If this happen, remove the cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.



- **Changing the wireless remote control transmission code**

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (J - A) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).

Indoor printed circuit board	Remote control printed circuit board
	

	Remote control printed circuit board		Indoor printed circuit board			Note
	J - A	J - B	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13 Troubleshooting Guide

13.1. Refrigeration cycle system

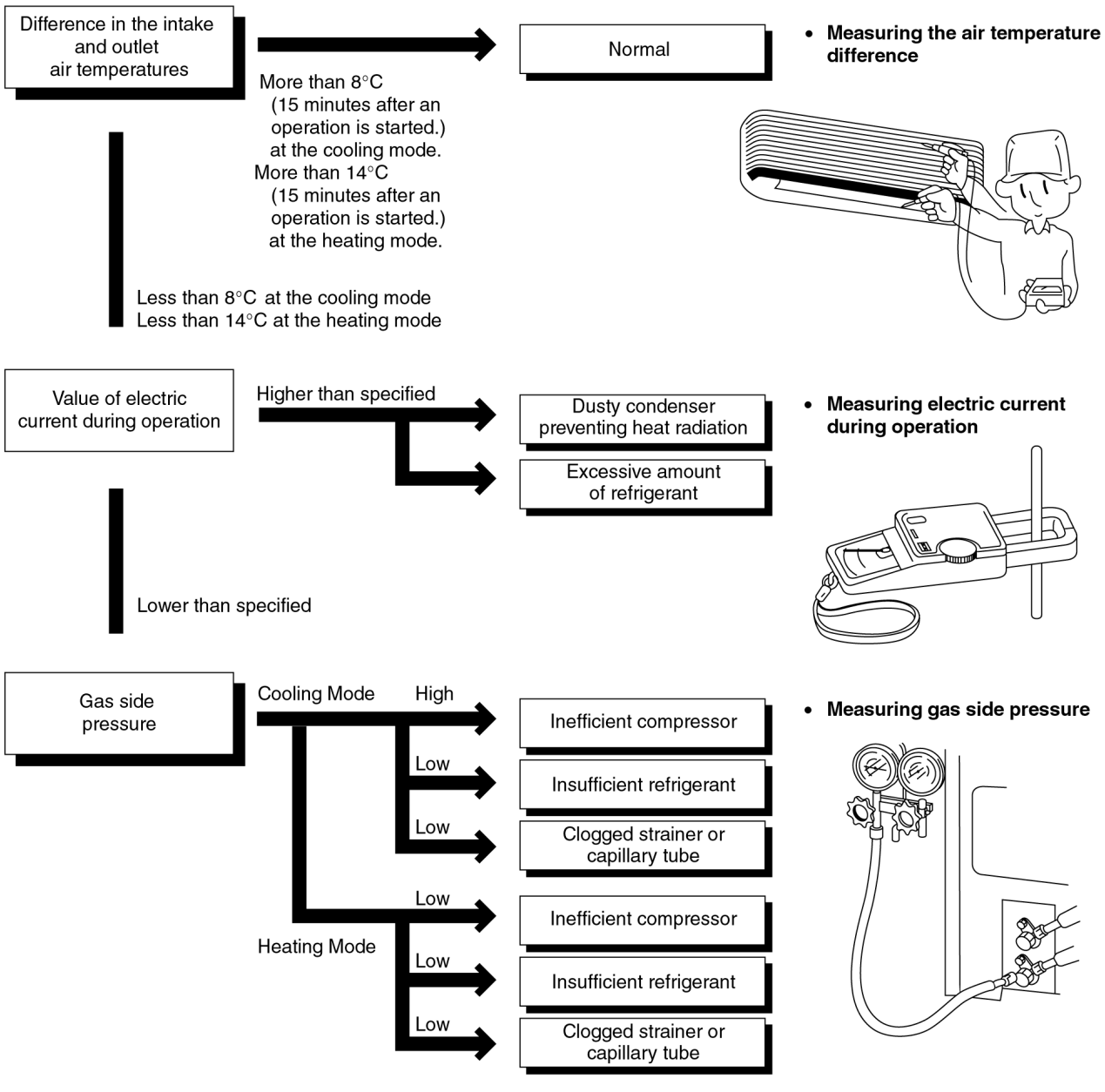
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	**Outlet air temperature (°C)**
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	**12 ~ 16**
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	**36 ~ 45**

* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
Normal
More than 8°C (15 minutes after an operation is started.) at the cooling mode.
More than 14°C (15 minutes after an operation is started.) at the heating mode.
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
• Measuring the air temperature difference
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
Lower than specified
• Measuring electric current during operation
Gas side pressure
Cooling Mode
High
Low
Low
Low
Heating Mode
Low
Low
Inefficient compressor
Insufficient refrigerant
Clogged strainer or capillary tube
Inefficient compressor
Insufficient refrigerant
Clogged strainer or capillary tube
• Measuring gas side pressure

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

• Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

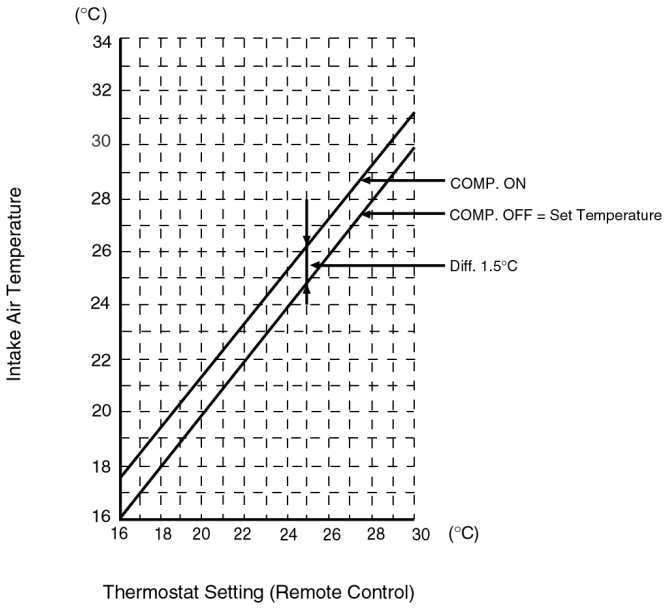
13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70°C to 90°C). • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	• Electric current reaches a high level abnormally, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off. • The compressor is a humming sound.
Insufficient switches of the 4-way valve	• Electric current during operation becomes approximately 80% lower than the normal value. • The temperature different between from the discharge tube to the 4-way valve and from suction tube to the 4-way valve becomes almost zero.

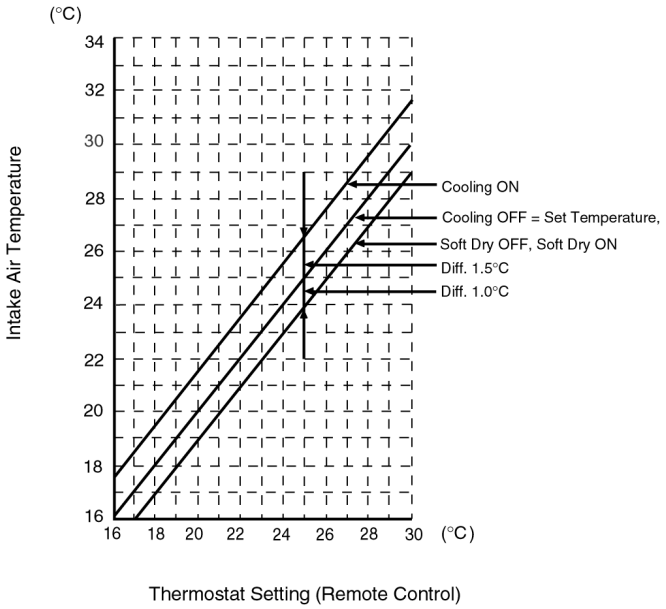
14 Technical Data

■ Thermostat characteristics

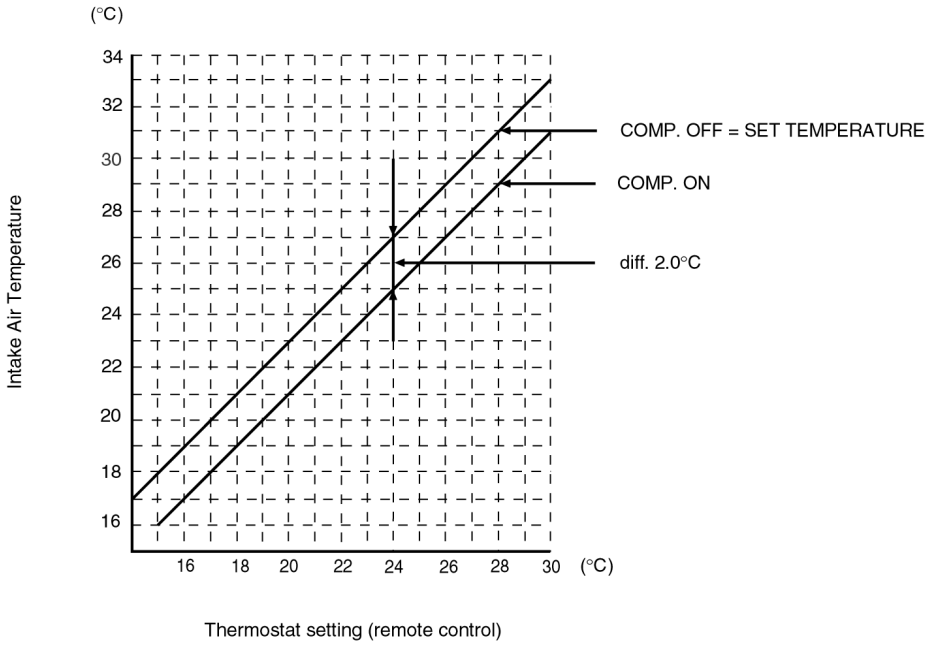
- **Cooling**



- **Soft Dry**



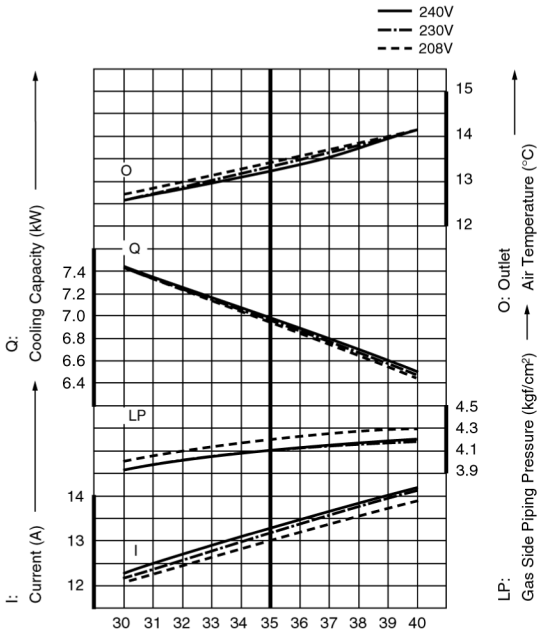
- **Heating**



■ Operation characteristics

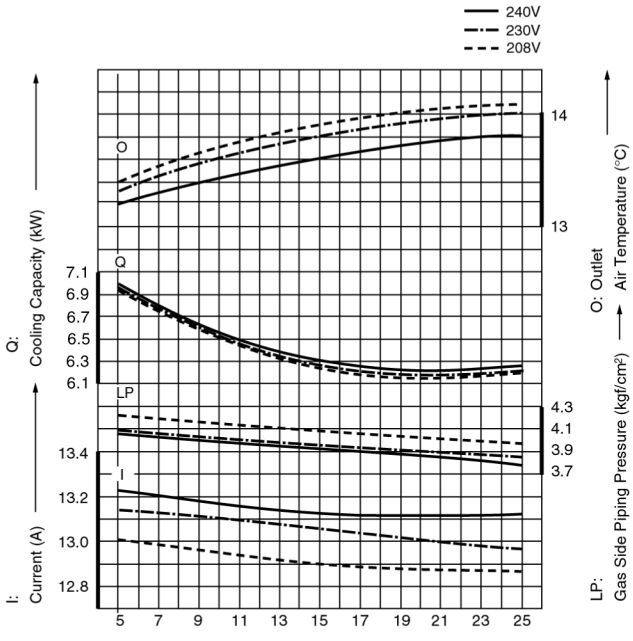
CS-A24CKPG CU-A24CKP6G

• Cooling Characteristic



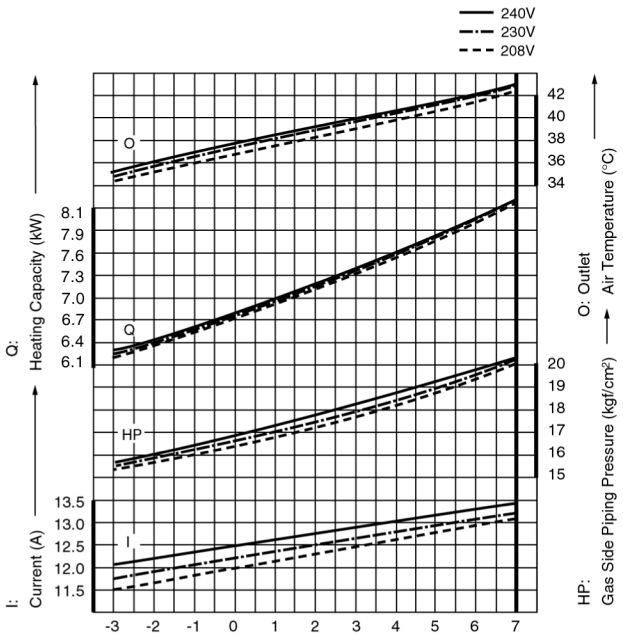
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Cooling)



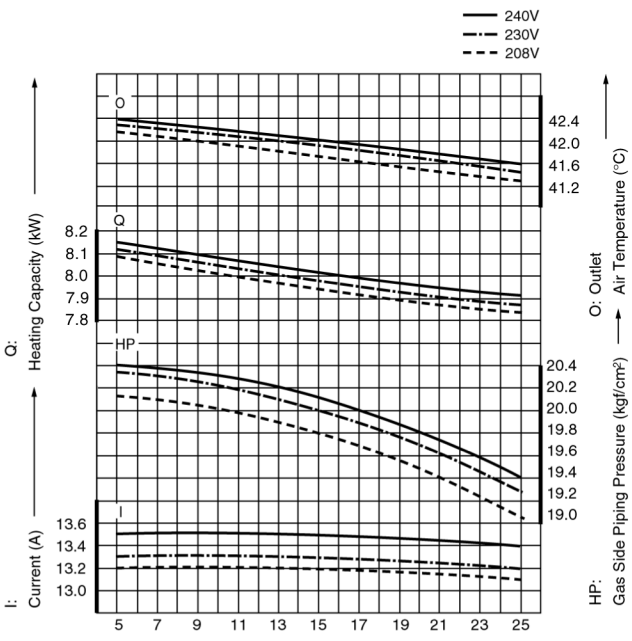
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

• Heating Characteristic



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

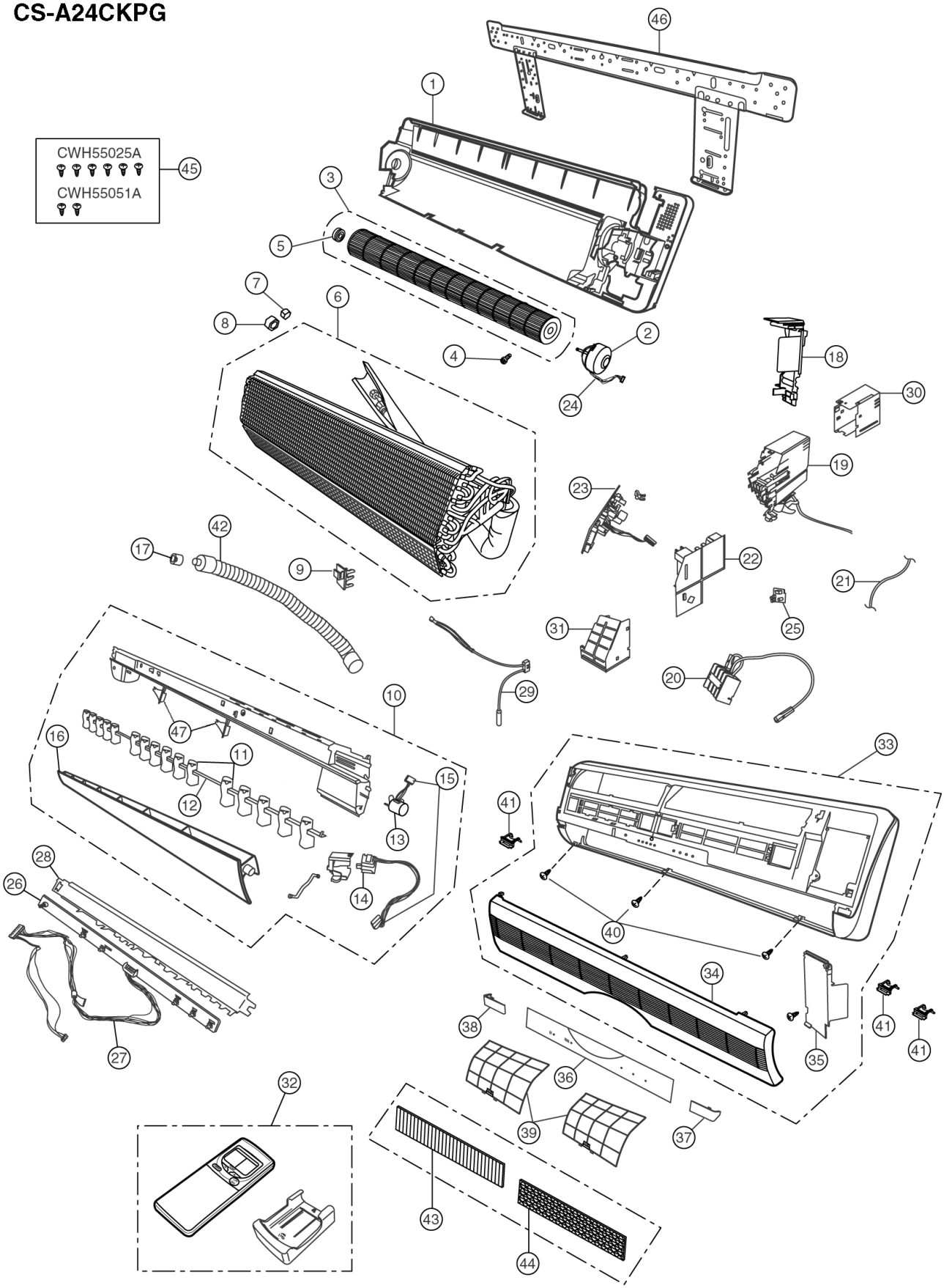
• Piping Length Characteristic (Heating)



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

15 Exploded View

CS-A24CKPG



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

16 Replacement Parts List

<Model: CS-A24CKPG>

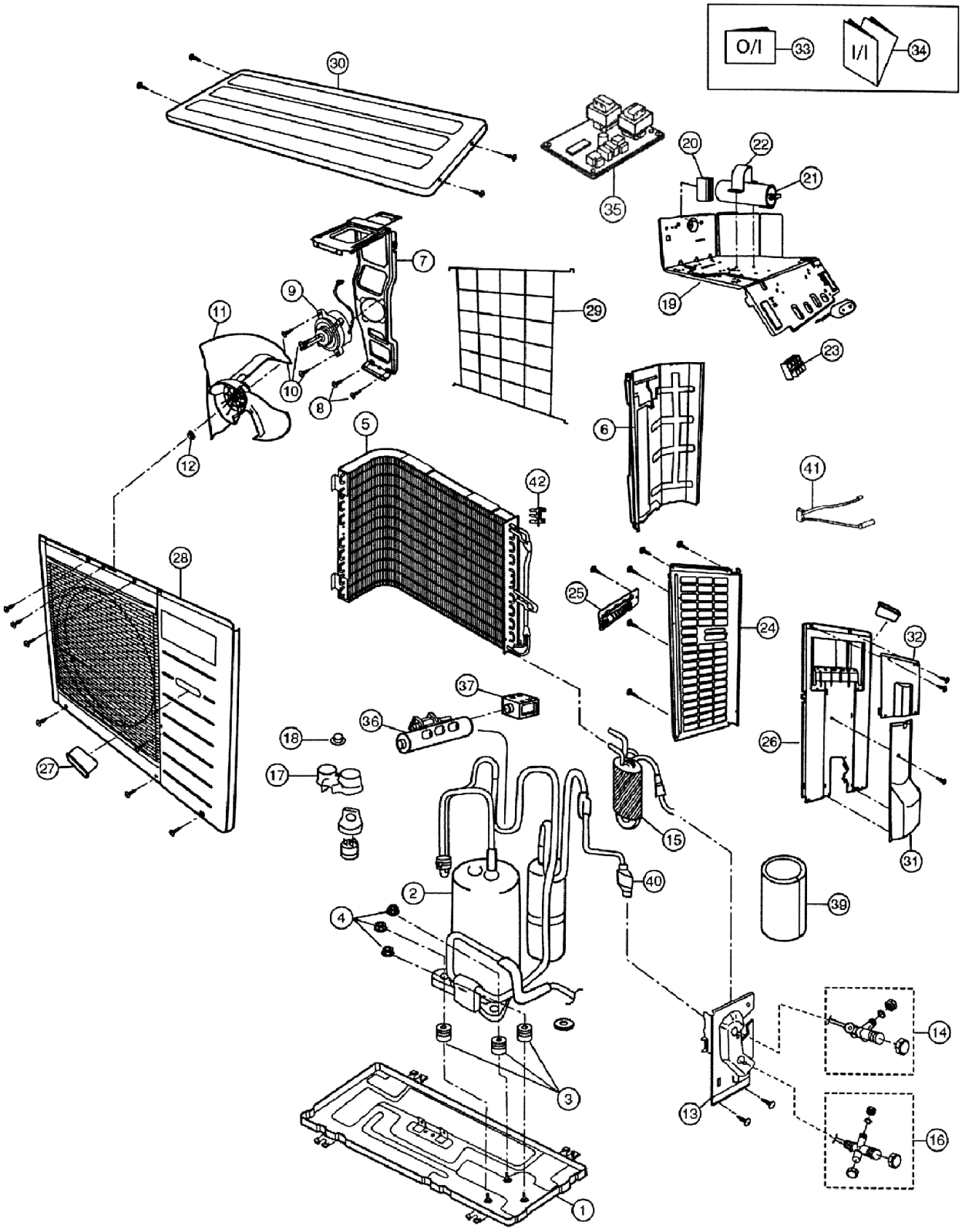
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-A24CKPG	REMARKS
1	CHASSY COMPLETE	1	CWD50C1294	
2	FAN MOTOR	1	CWA981056	0
3	CROSS FLOW FAN COMPLETE	1	CWH02C1010	
4	SCREW - CROSS FLOW FAN	1	CWH4580304	
5	BEARING ASS'Y	1	CWH64K007	
6	EVAPORATOR	1	CWB30C1451	
7	FLARE NUT	1	CWT25078 (1/4")	
8	FLARE NUT	1	CWT25004 (5/8")	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2234	
11	VERTICAL VANE	16	CWE241088	
12	CONNECTING BAR	1	CWE261025	
13	AIR SWING MOTOR	1	CWA98259	0
14	AIR SWING MOTOR	1	CWA981041	0
15	LEAD WIRE - AIR SWING MOTOR	2	CWA67C3731	
16	HORIZONTAL VANE	1	CWE241136	
17	CAP - DRAIN TRAY	1	CWH52C1001	
18	PARTICULAR PIECE	1	CWD932162	
19	CONTROL BOARD	1	CWH102103B	
20	TERMINAL BOARD COMPLETE	1	CWA28C2166	0
21	POWER SUPPLY CORD	1	-	
22	ELECTRONIC CONTROLLER - MAIN	1	CWA743231	0
23	ELECTRONIC CONTROLLER - POWER	1	CWA742616	0
24	LEAD WIRE - FAN MOTOR	1	-	
25	P.C.B. RECEIVER	1	CWA742724	
26	ELECTRONIC CONTROLLER - INDICATOR	1	CWE39C1093	0
27	LEAD WIRE - INDICATOR	1	CWA67C3724	
28	INDICATOR HOLDER	1	CWD932163	
29	SENSOR COMPLETE	1	CWA50C2135	0
30	CONTROL BOARD TOP COVER	1	CWH131091	
31	CONTROL BOARD FRONT COVER	1	CWH131090	
32	REMOTE CONTROL COMPLETE	1	CWA75C2189	0
33	FRONT GRILLE COMPLETE	1	CWE11C2847	
34	INTAKE GRILLE	1	CWE221037	
35	GRILLE DOOR	1	CWE14C1004	
36	CONTROL PANEL	1	CWE312114	
37	DECORATION BASE (R)	1	CWE351067	
38	DECORATION BASE (L)	1	CWE351068	
39	AIR FILTER	2	CWD001099	
40	SCREW - FRONT GRILLE	4	XTT4+16C	
41	CAP - FRONT GRILLE	3	CWH521062	
42	DRAIN HOSE	1	CWH851044	
43	AIR PURIFYING FILTER	1	CWMD00C0001	0
44	SOLAR DEODORIZING FILTER	1	CWMD00C0002	0
45	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	
46	INSTALLATION PLATE	1	CWH36K1007	
47	FULCRUM	2	CWH621013	

(Note)

- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- "0" marked parts are recommended to be kept in stock.

17 Exploded View

CU-A24CKP6G



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

18 Replacement Parts List

<Model: CU-A24CKP6G>

REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-A24CKP6G	REMARKS
1	CHASSY ASS'Y	1	CWD50K2091A	
2	COMPRESSOR	1	2J39S236A1A	0
3	ANTI - VIBRATION BUSHING	3	CWH50055	
4	NUT - COMPRESSOR MOUNT	3	CWH4582065	
5	CONDENSER	1	CWB32C1372	
6	SOUND PROOF BOARD	1	CWH151062	
7	FAN MOTOR BRACKET	1	CWD541055	
8	SCREW - FAN MOTOR BRACKET	3	CWH551060	
9	FAN MOTOR	1	CWA951302	0
10	SCREW - FAN MOTOR MOUNT	3	CWH55252	
11	PROPELLER FAN ASS'Y	1	CWH03K1017	
12	NUT - PROPELLER FAN	1	CWH561038	
13	HOLDER COUPLING ASS'Y	1	CWH351042	
14	2-WAY VALVE (LIQUID)	1	CWB021173	0
15	TUBE ASS'Y (CAPILLARY TUBE & STRAINER)	1	CWT01C2896	
16	3-WAY VALVE (GAS)	1	CWB011213	0
17	TERMINAL COVER	1	CWH171012	
18	NUT - TERMINAL COVER	1	CWH7080300	
19	CONTROL BOARD	1	CWH102221	
20	CAPACITOR - FAN MOTOR	1	DS441505NPQB	0
21	CAPACITOR - COMPRESSOR	1	CWA312088	0
22	HOLDER CAPACITOR	1	CWH30071	
23	TERMINAL BOARD ASS'Y	1	CWA28K1058	
24	CABINET SIDE PLATE (L)	1	CWE041096A	
25	HANDLE	1	CWE161010	
26	CABINET SIDE PLATE (R)	1	CWE041097A	
27	HANDLE	2	CWE16000E	
28	CABINET FRONT PLATE	1	CWE06K1046	
29	WIRE NET	1	CWD041041A	
30	CABINET TOP PLATE	1	CWE03K1010A	
31	CONTROL BOARD COVER (BOTTOM)	1	CWH131168	
32	CONTROL BOARD COVER (TOP)	1	CWH131184A	
33	OPERATION INSTRUCTIONS	1	CWF564204	
34	INSTALLATION INSTRUCTIONS	1	CWF612517	
35	ELECTRONIC CONTROLLER	1	CWA743035	
36	4-WAY VALVE ASS'Y	1	CWB00K1027	
37	V-COIL COMPLETE	1	CWA43C2114	
39	SOUND PROOF MATERIAL	1	CWG302221	
40	STRAINER	1	CWB11025	
41	SENSOR COMPLETE	1	CWA50C618	
42	HOLDER - SENSOR	1	CWA32089	

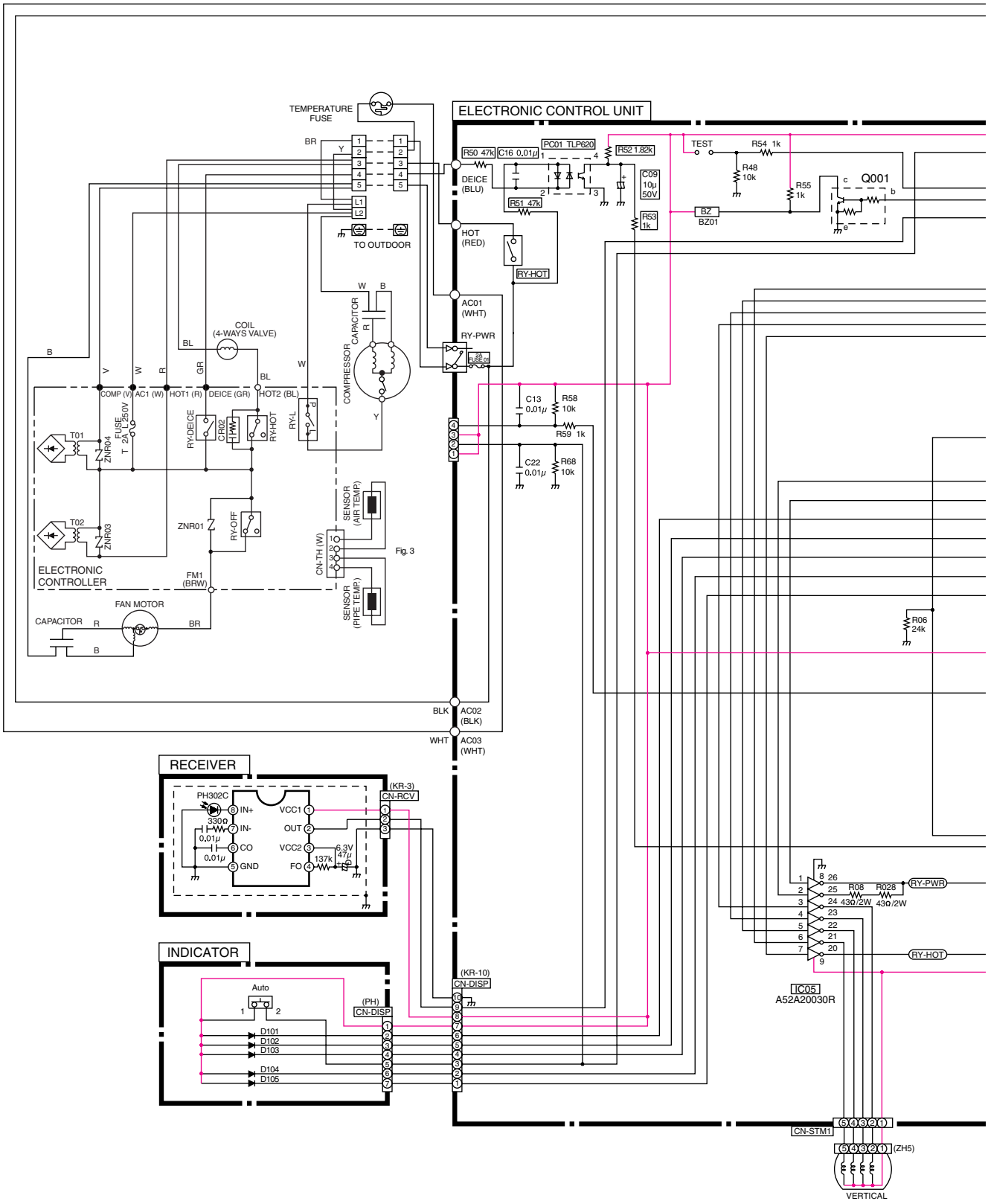
(Note)

- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- "0" marked parts are recommended to be kept in stock.

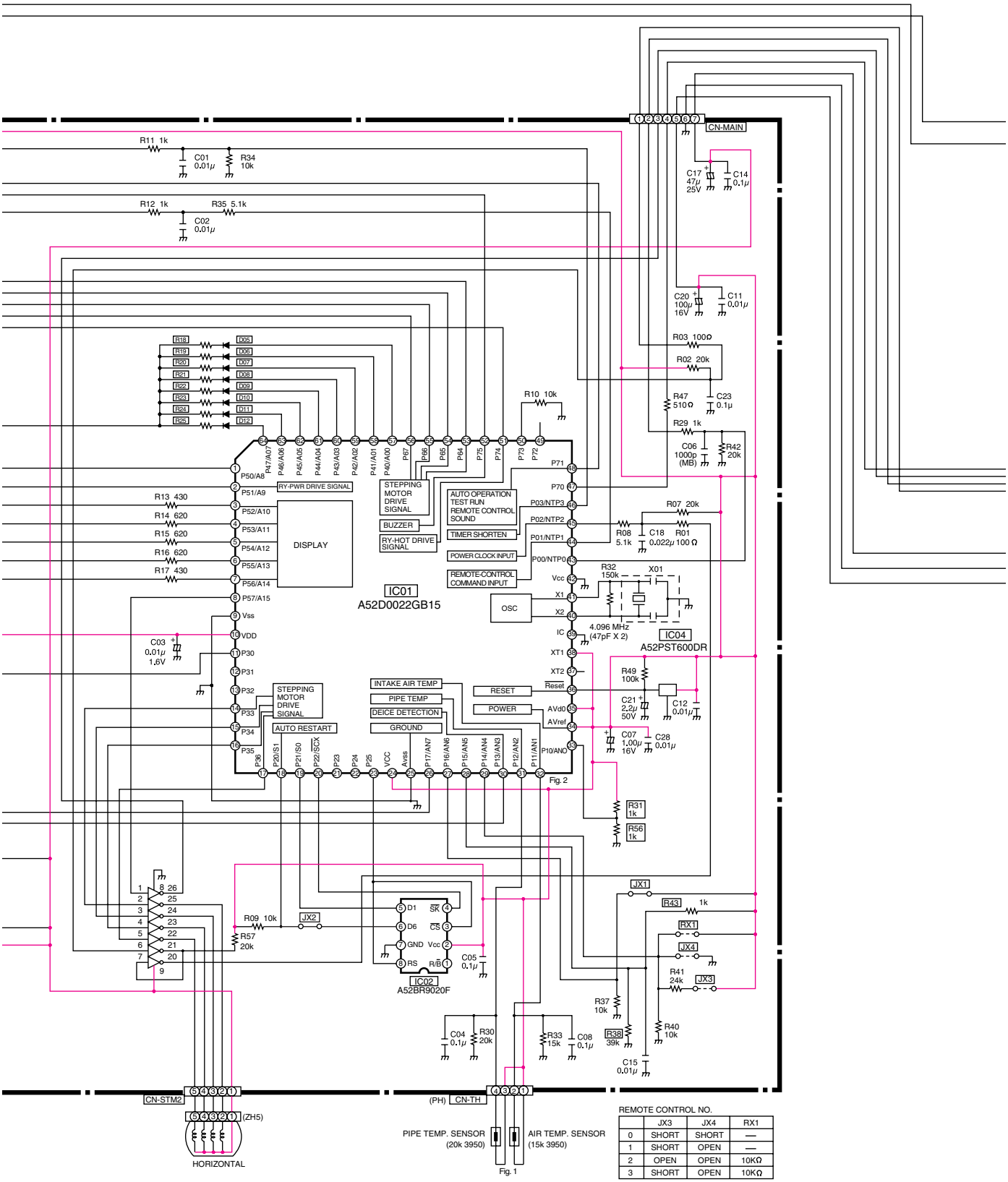
19 Electronic Circuit Diagram

• CS-A24CKPG / CU-A24CKP6G

SCHEMATIC DIAGRAM 1/3



SCHEMATIC DIAGRAM 2/3



SCHEMATIC DIAGRAM 3/3

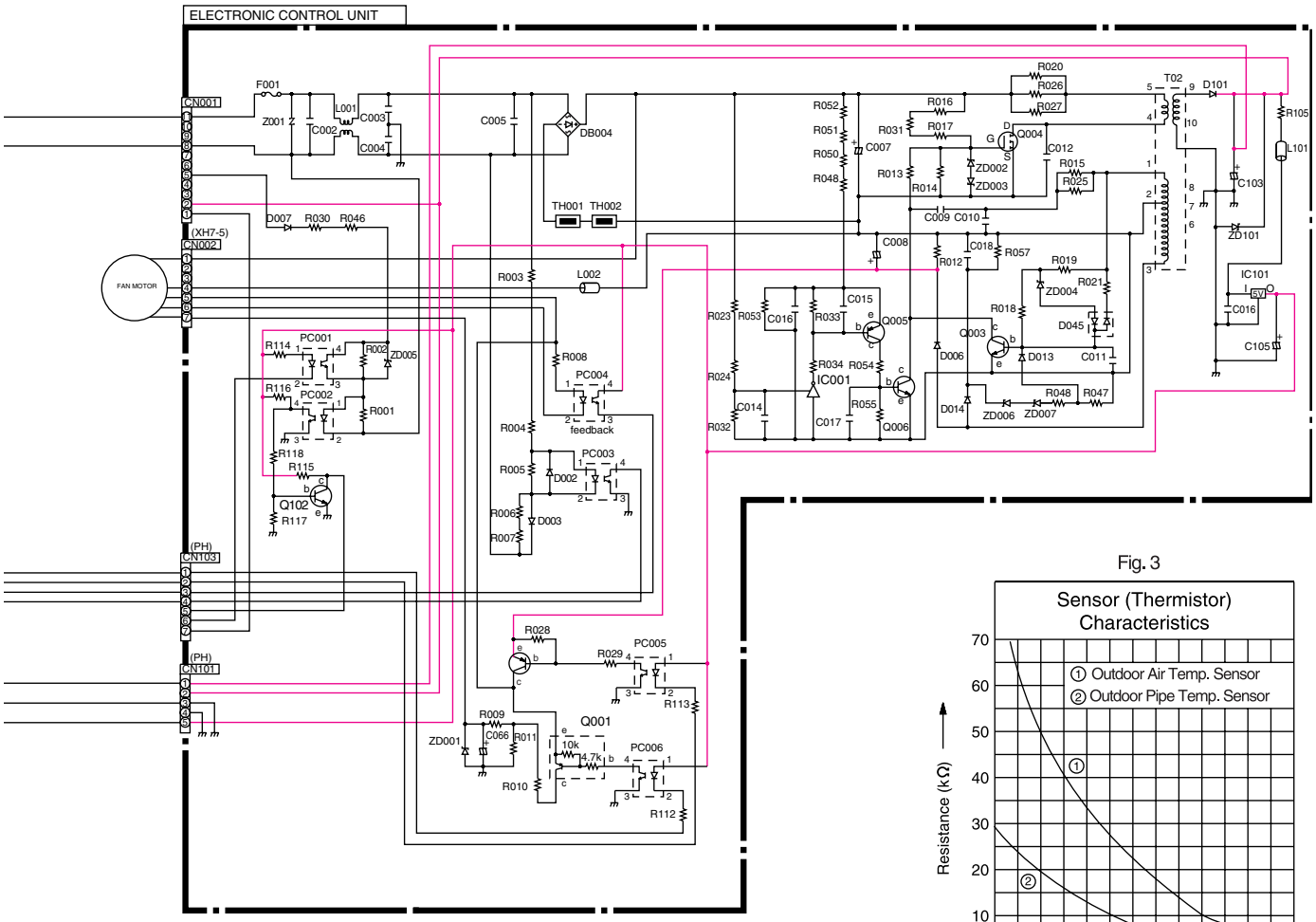


Fig. 3

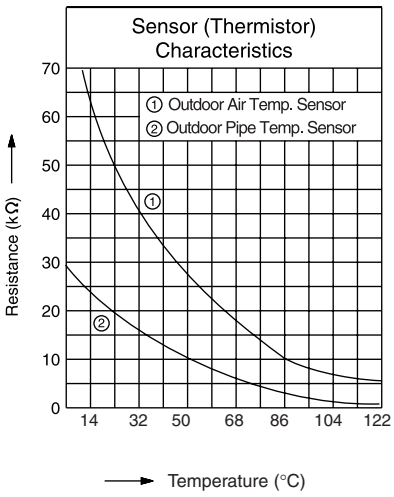


Fig. 1

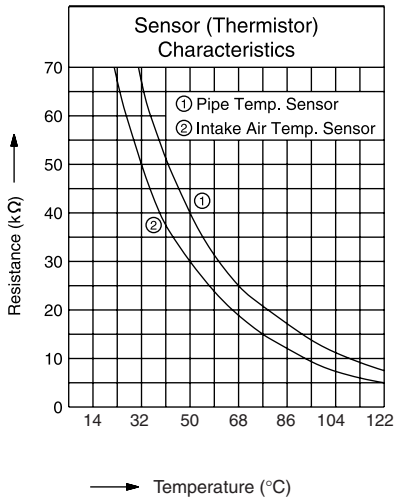


Fig. 2

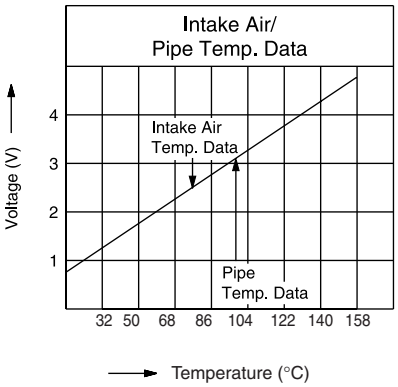
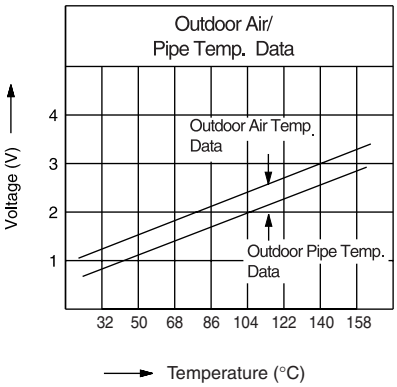


Fig. 4



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer. Use them for servicing.
  Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
  .....metal oxide resister
  Tolerance±1%

* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor

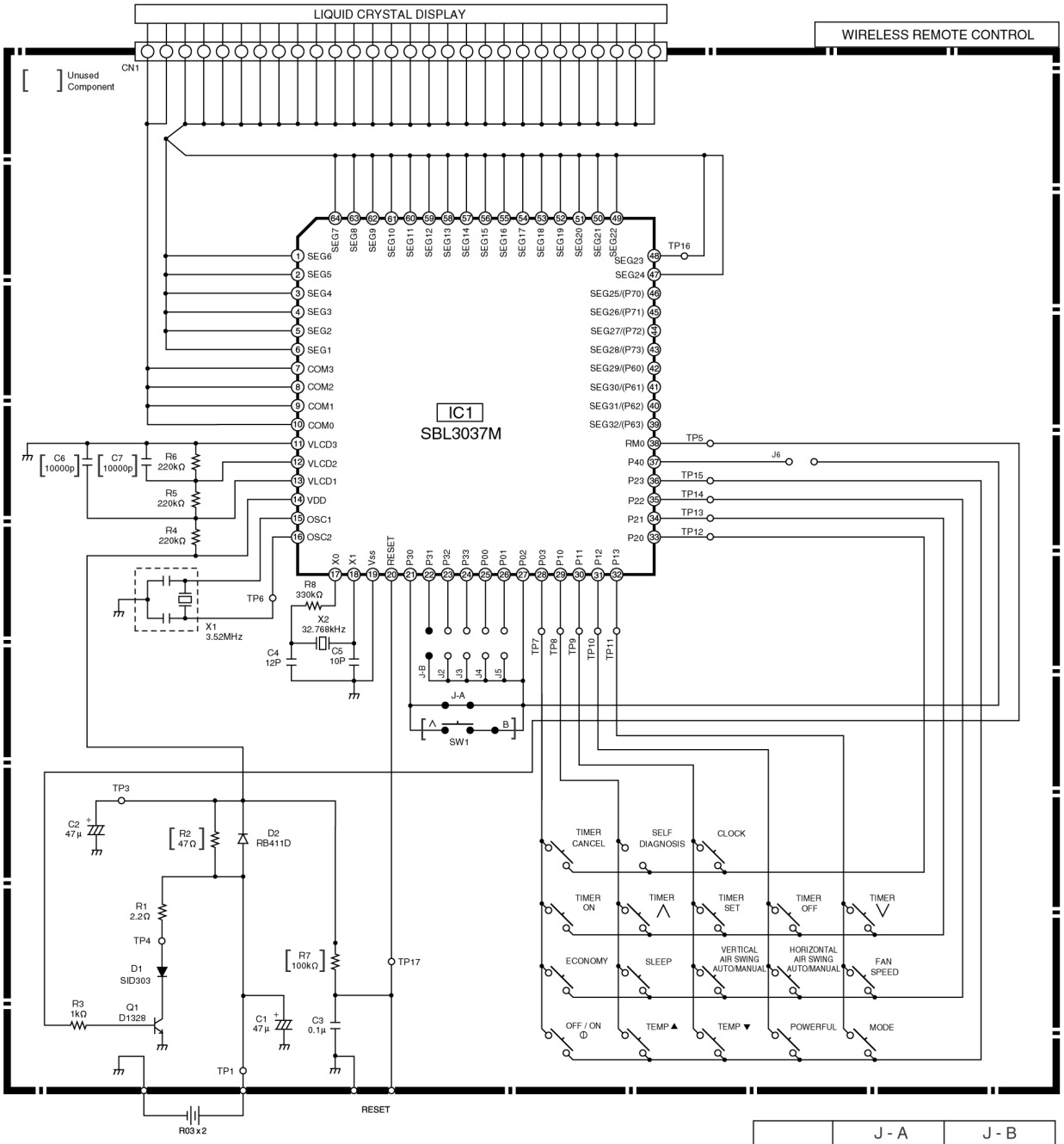
* Diode without indication.....MA165

※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test Mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		1 hr.	6 sec.	
Sleep Mode Operation		8 hrs.	48 sec.	
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	42 sec.	
Anti-Freezing		4 min.	0 sec.	
Auto Mode Judgement		25 sec.	0 sec.	
Soft Dry	OFF	6 min.	36 sec.	
	ON	10 min.	60 sec.	Soft Dry: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	
		70 sec.	7 sec.	
		20 sec.	2 sec.	
		180 sec.	18 sec.	
	Soft Dry	40 sec.	4 sec.	
		360 sec.	36 sec.	
Comp. Reverse Rotation Detection		5 min.	30 sec.	Comp. ON 5 min. and above
		2 min.	0 sec.	
Comp./ Fan Motor Delay Timer		1.6 sec.	0 sec.	
Powerful Mode Operation		15 min.	15 sec.	
Random Auto Restart Control		0 ~ 62 sec.	0 ~ 6.2 sec.	
4 Way Valve		5 min.	30 sec.	
After Deice Ended		30 sec.	3 sec.	Comp. OFF after deice
Hotstart Delay Times		4 min.	0 sec.	
Hotstart Finish Times		2 min.	0 sec.	

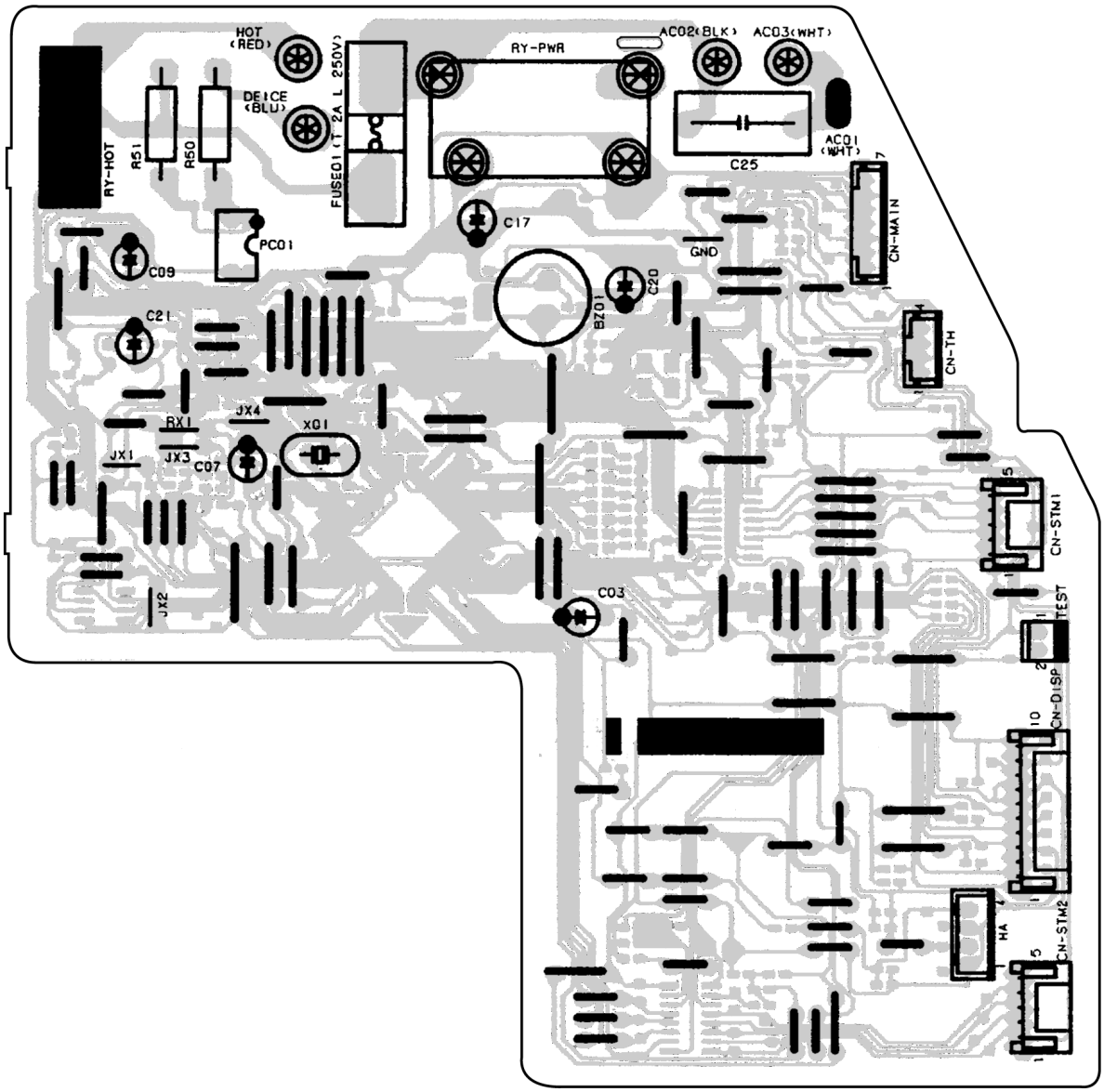
19.1. REMOTE CONTROL



	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

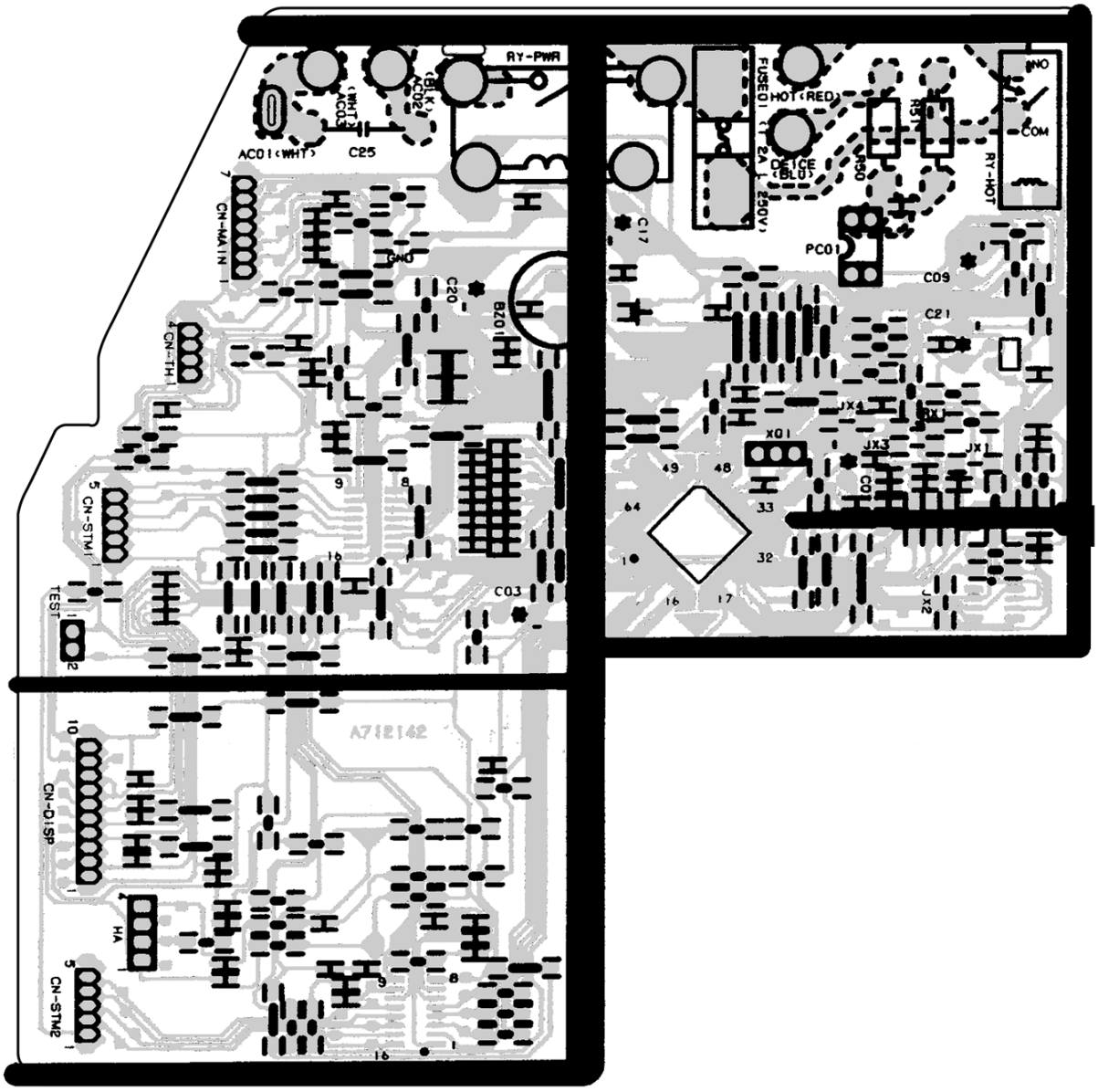
19.2. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

TOP VIEW



19.3. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

BOTTOM VIEW



19.4. PRINT PATTERN
OUTDOOR UNIT PRINTED CIRCUIT BOARD